WATCH Center

WATCH Center Series 3 Owner's Manual

WILSON AUDIO

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Contents

WATCH Center Series 3 Owner's Manual 1

Section 1—Introduction 9

Section 1.1—WATCH System Introduction 11

Design Considerations 11

Applications 12

Section 1.2—WATCH Package 12

WATCH Center Series 3 12

WATCH Dog Passive Subwoofer 13

WATCH Controller 13

WATCH Surround Series 2 14

Conclusion 15

Section 2—Uncrating your WATCH Center 17

Section 2.1—Uncrating the WATCH Center Channel 19

Initial Check 19

Uncrating the WATCH Center 19

Section 2.2—Crate Content Checklist 20

Center Channel Crate 20

Center Stand Box 21

Section 3—In Your Room 23

Section 3.1—The Wilson Audio Setup Procedure 25

Final Listening Room Setup (Voicing) 25

Zone of Neutrality: Main Left and Right Channel 25

Section 3.2—Room Acoustics 27

Slap Echo 27

Standing Waves 29

Comb Filter Effect 31

Section 3.3 — Resonances 31

Structural Resonance 32

Volume Resonance 32

Section 3.4 — Your Room 33

Room Shapes 33

Speaker Placement Versus Listening Position 34

Speaker Orientation 35

Center Channel 35

Surround Channel 36

WATCH Dog Passive Subwoofer 37

Section 4 — Initial Setup 39

Section 4.1 — Final Setup 41

Preparation 41

Section 4.2 — Center Channel Spikes 41

Assembly 43

Section 4.3 — Measured Listening Position 43

Room Setup 43

Center Channel Configurations 44

Section 4.4 — Setup #1 Center Channel on Floor 45

Section 4.5 — Setup #2 Center Channel on Stand 46

Section 4.6 — Set Up #3 Center on Custom Stand or Shelf 48

Section 4.7 — Setup #4 Center Mounted to Ceiling 50

Section 4.8 — Center Channel Final Setup 53

Stand or Floor Mounted Center Channel 53

Ceiling or Other Custom Location 54

Section 4.9—Connecting Speaker to Amplifier 55

Speaker Cables 56

Spade Lugs 56

Connection of the Center to the Power Amplifier 57

Center Channel Setup Completed 57

Section 5—Final Tuning and Voicing 59

Section 5.1—Final Tuning and Voicing 61

Section 5.2—Left and Right Channels 61

Determining Front to Back Distance 62

Determining Side to Side Distance 63

Section 5.3—Integrating the WATCH System 64

Integrating the WATCH Center 64

Image Height 65

Center Rotation 65

Resetting the Propagation Delay correction (PDC) 66

Integrating the WATCH Surround Channels 66

Integrating the Passive WATCH Dog 67

Section 6—Care of the Finish 69

Section 6.1—Care of the Finish 71

Dusting the WATCH Center 71

Care of the Grills 71

Break-in Period 72

Section 6.2—Enclosure Technology 72

Materials 72

Adhesive 73

Section 6.3—Depth of Design 73

Section 7 — Troubleshooting 75

Section 7.1 — Troubleshooting: 77

Section 8 — Repair Procedures 81

Section 8.1 — Repair Procedures 83

Replacing an Open Resistor 83

Replacing a Bad Driver 83

Section 9 — Specifications 85

Section 9.1 — WATCH Center Channel Specifications 87

Drivers: 87

Measurements: 87

Dimensions: 87

Weight Uncrated: 87

Shipping Weight (approximate): 87

Section 9.2 — Center Series 3 Dimensions 88

Section 9.3 — Center Series 3 Matching Stand Dimensions . 89

Section 9.4 — Center Series 3 on Matching Stand Dimensions 90

Section 9.5 — Center Series 3 Impedance Curve 91

Section 10 — Tweeter Alignment Tables 93

Table 1 — For Placement on Floor 95

Table 2 — For Placement on Stand 96

Section 11 — Ceiling Mount 97

Section 11.1 — Ceiling Mounted Center Channel 99

Section 11.2 — Mounting Center Channel above Screen ... 100

Section 12 — Warranty Information 103

Section 12.1—Warranty Information 105

Limited Warranty 105

Conditions 105

Remedy 106

Warranty Limited to Original Purchaser 106

Demonstration Equipment 107

Miscellaneous 107

Section 1—Introduction

Section 1.1—WATCH System Introduction

If your passion is home theater, and you have sought the full sensory experience created as your eyes absorb the vision and your skin awakens to the power of the sound, Wilson Audio has your answer. Introducing WATCH—Wilson Audio Theater Comes Home.

While all Wilson speakers are designed to take full advantage of today's popular multi-channel formats, WATCH is the first Wilson system designed from the ground up to excel specifically at home theater performance. Best of all, it comes in a package as small or as large as you desire.

The fact is, you haven't truly experienced home theater until you've felt the impact, power, and passion of a film score the way the director intended it, and no company will deliver this passion like Wilson Audio. That's why, for nearly twenty years, more block-buster hits have been mixed, composed, or recorded using Wilson Audio than any other loudspeaker.

Design Considerations

Your WATCH System has been designed to perform all of the specific functions of a high performance home theater system. This was a difficult task because of the many interactions that occur in a home theater environment. Because the WATCH System was designed in-house and voiced with a variety of Wilson speakers, you can be sure that the driver blend will be excellent whether your system includes Sophia Series 3 or the X-2 Alexandria Series 2. Wilson Audio loudspeakers have set the standard for performance in a wide variety of two-channel audio and multi-channel home theater applications. The WATCH Center Series 3 ensures the most seamless integration with your Wilson Audio loudspeakers. The WATCH Center is the only center channel designed specifically to match the inherent quality of the Sophia, Sasha, Polaris MAXX, and, in many instances, the Alexandria X-2.

Applications

One of Wilson Audio's most important criteria in speaker development is that a speaker meets the accuracy and dynamic demands of studio monitoring, analytical hardware and software evaluation, and, of course, critical music and theater soundtrack listening. The WATCH Center Series 3 has been designed to deliver all of the speed, dynamics, and musical accuracy to satisfy even the most demanding music lovers.

The WATCH Center has been engineered to take full advantage of today's multi-channel surround formats, including the latest AC-3 (Dolby Digital) and DTS (Digital Theater Systems) formats.

It will provide years of satisfaction whether listening to two-channel audio, multi-channel audio, or to the latest movie sound track.

Section 1.2—WATCH Package

WATCH Center Series 3

Specifically designed to excel at center channel functions, WATCH Center is extremely dynamic with high sensitivity and robust power handling. Unlike most center channels, it provides listeners not only with optimal on-axis response, but also smooth, linear, off-axis performance. This is, in part, a result of Wilson PDC (Propagation Delay Correction) technology first developed for the WAMM® and X-1 Grand SLAMM® systems and later applied to the rest of the Wilson Line. PDC

Figure 1 – WATCH Center Channel Series 3

allows for optimal tuning of a loudspeaker for various listening distances and heights and gives listeners much greater control over their sound.

The WATCH Center Series 3 was designed from the ground up as a center channel. It is not merely a standard speaker that was tipped onto its side. The Center channel was voiced and optimized to truly represent dialogue for movies as well as music and vocals when used in a multi-channel audio setup.

Of course, the WATCH Center Series 3 lives up to Wilson's high standards of cutting edge design, superior build quality, and stunning sonic performance. The WATCH Center is available with a matching stand.

WATCH Dog Passive Subwoofer

The WATCH Dog passive subwoofer is the culmination of over thirty years of experience at Wilson Audio in building high output, ultra-low distortion woofer and subwoofer products. It was designed to further extend and enhance the bottom octave performance of music and theater systems without compromising speed, tonal accuracy, or phase coherency. The WATCH Dog will seamlessly and coherently integrate with any loudspeaker, whether you are augmenting a two-channel system or using the Dog as the LFE channel in a surround system.

FIGURE 2 – WATCH DOG PASSIVE SUBWOOFER

WATCH Controller

Like other WATCH products, along with music system applications, the WATCH Dog

Figure 3 – WATCH Controller

was designed to take advantage of today's multi-channel formats. The unique tunability of the WATCH Dog is greatly enhanced when used with the WATCH Dog Controller active crossover. The crossover's comprehensive control allows the WATCH Dog to be optimized for both music and multi-channel applications, even within the same system. The crossover adjustments allow critical setup, ensuring the best possible performance in a wide range of rooms and with a variety of speakers.

WATCH Surround Series 2

WATCH Surround Series 2 is a perfect example of performance disproportionate to size. With strong power handling capacity and low end frequency response reaching 32Hz, this speaker will take your surround sound to new heights. Unlike most surround speakers, WATCH Surround is more than a noisemaker. It brings accuracy, dynamics, and emotion to your theater, and with its gorgeous WilsonGloss™ finish, it looks right at home on your wall.

The greatest challenge for any wall-mount loudspeaker is accounting for the deleterious interaction with the wall and

Figure 4 – WATCH Surround

ceiling, as well as degradation caused by the mount itself. This causes frequency nonlinearities—accentuating some frequencies and effectively masking others. WATCH Surround minimizes wall/ceiling resonant interactions through its advanced mounting system. Using state-of-the-art materials technology first developed for the X-1 Grand SLAMM, WATCH Surround provides stunning results.

The Surround is mounted to its bracket by strategically located spikes, further reducing wall interaction and resonance. The Surround can also be rotated towards the listening position, offering improved integration with the front speakers and better imaging.

Conclusion

Finally, a home theater, designed from the ground up as multi-channel, that is truly high-end. Combine the structural and design considerations with the superior sonic quality and finish, and you find what makes Wilson Audio the leader in the industry. Wilson Audio delivers a product that maintains the strictest structural tolerances, durability and reliability. You will have consistent, repeatable performance, unaffected by the climatic conditions, anywhere in the world. You are about to experience multi-channel audio/home theater like you never thought possible, except from Wilson ....

WATCH Center

Section 2—Uncrating your WATCH Center

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Section 2.1—Uncrating the WATCH Center Channel

Initial Check

The WATCH Center Channel is shipped in a wooden crate. If you have also purchased a Center stand, it is shipped in a separate cardboard box. Upon receiving the crate (and cardboard box), please check their condition. If there is any damage, please report it to the shipping company immediately for insurance verification.

The following items are recommended for this procedure:

- Supplied hardware kit
- Tape measure
- Known listening position
- Electric screwdriver
- Phillips head drive bit or Phillips head screwdriver

Uncrating the WATCH Center

Gently lift the Center channel out of the crate. Remove the plastic outer bag. Inventory the crate contents. Move the Center channel into the desired location.

Note: Do not cut the bag off of the Center channel. By using scissors or a knife, you could unintentionally damage the paint surface or a driving element. Keep the bag in case you need to repackage the Center channel. Likewise, save your shipping crates and all packing materials. They are specifically designed to prevent harm from coming to your WATCH Center.

Note: Be careful not to touch the driver elements when you are moving your Center channel.

Section 2.2—Crate Content Checklist

Now that you have unpacked your WATCH Center Channel, you can inventory all the additional items in the crate.

Center Channel Crate

1—Owner's Manual

1—Warranty Registration (included in the manual)

1—Center Midrange Grill

1—Center Tweeter Grill

8—Nuts

4—Spikes

4—Brass Discs

4—Spacers

2—Diodes

1—Universal Allen Handle

1—1/2″ Nut Driver

1—1/8″ Allen Head

1—3/32″ Allen Head

1—5/32″ Allen Head

1—5/16″ Allen Head

1—Blue Polishing Cloth

Center Stand Box

If you purchased a Wilson Audio Center Stand on which to mount your WATCH Center Channel, you will find the following items in the box with your stand:

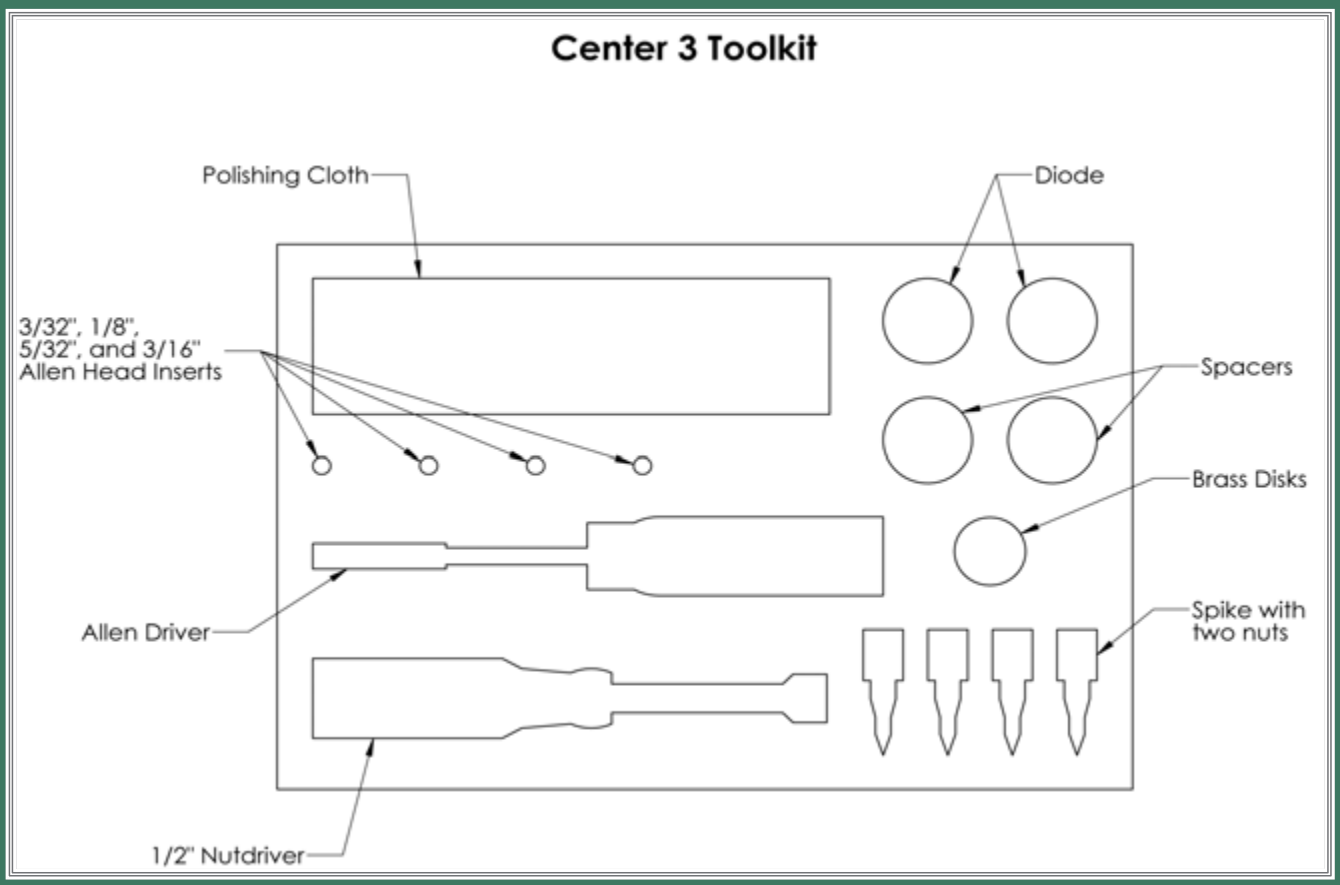


FIGURE 5 – WATCH CENTER CHANNEL SERIES 3

4—3/8″ - 16 x 1 1/2″ Socket Head Cap Screws

4—3/8″ x 7/8″ Stainless Steel Flat Washers

1—9/16″ Wrench

1—3/16″ Long Arm Allen Wrench

1—5/16″ Long Arm Allen Wrench

1—Polishing Cloth

Section 3—In Your Room

Section 3.1—The Wilson Audio Setup Procedure

You are surely excited about setting up your Center Series 3 and doing some listening, but before you begin, we would like to discuss some of the important room acoustical information that will help you set up your loudspeakers properly.

Final Listening Room Setup (Voicing)

For Center Series 3's size and single-module configuration, it is unmatched in its ability to reproduce the musical event. However, room acoustics and boundary interactions affect the sound of a loudspeaker to such a large degree that poor setup can seriously degrade your enjoyment of even the finest loudspeaker.

Therefore, we offer the following section, which will present some guidelines on room acoustics and their interactions with loudspeakers. While we will also outline some detailed suggestions on the setup of the Center Series 3, we strongly suggest that you have your local Wilson Audio dealer perform the final speaker "voicing" with you. Wilson dealers are specially trained in setting up Wilson loudspeakers and will ensure that you realize the full value of your purchase. What follows is an outline of the Wilson Audio Setup Procedure (WASP). When carefully followed, the process has proven to be the most effective method for setting up Wilson loudspeakers.

Zone of Neutrality: Main Left and Right Channel

The "Zone of Neutrality" is an area in your room where the speakers will sound most natural. This location is where the speakers interact the least with adjacent room boundaries. It is important to have a clear working space while determining the Zone of Neutrality.

The following is a simple method to locate the Zone of Neutrality within your listening environment:

1. Stand against the wall BEHIND the location where you intend to position your loudspeakers. Speaking in a moderately loud voice and at a constant

volume, project your voice out into the room. Your voice will have an overly heavy, "chesty" quality because of your proximity to the rear wall.

2. While speaking, slowly move out into the room, progressing in a direction parallel to the sidewall. It is helpful to have another listener seated in the listening position to assist you during this process. Listen to how your voice "frees up" from the added bass energy imparted by the rear wall boundary. Also notice that your voice is quite spatially diffuse (to your assistant, your voice will sound spatially large and difficult to localize) as you begin to ease away from the rear wall.

3. At some point during your progression forward into the room, you will observe a sonic transition in your voice; it will sound more tonally correct and less spatially diffuse (your assistant can now precisely localize the exact origin of your voice). When you hear this transition, you have entered the inner edge of the Zone of Neutrality. Place a piece of tape on the floor to mark this location. Although it will vary from room to room, in most rooms the zone begins between two and a half to three feet from the rear wall.

4. Continue to walk slowly away from the rear wall. After some distance, usually one to two feet past the first piece of tape, you will begin to hear your voice lose focus and appear to reflect (echo) in front of you. This is caused by the return of the room's boundary contribution; your voice is now interacting with the opposite wall. At the point where you begin to hear the reflected sound of your voice, you have reached the outer edge of the Zone of Neutrality. Place a piece of tape on the floor and mark this location. The distance between the "inner" and "outer" edge tape marks is usually between eight inches (for small, interactive rooms) and three feet (for large, more neutral rooms).

5. Now position yourself against the side wall perpendicular to the intended speaker location. Stand between the two tape marks. Using the same procedure as above, begin moving into the room toward the opposite sidewall, progressing between the two pieces of tape. As above, listen for the point in the room where your voice transitions from bass-heavy and diffuse to neutral. Mark this point with tape. Continue your progression until there is an

obvious interaction with the opposite wall in front of you and mark this point with tape. The four pieces of tape now form a rectangle that establishes the Zone of Neutrality for the loudspeaker located on that side of the room. Using the four marks as your guide, tape an outline to define the boundaries of the rectangle.

6. Repeat this process for each speaker location individually. These are your Zones of Neutrality, one for each channel.

Theoretically, the Zone of Neutrality for any room runs like a path, parallel to the walls all around the room. Adjacent to very large windows and open doors, the outer edge of the Zone of Neutrality moves closer to the wall and becomes wider. If you were to extend the inner and outer boundaries of the Zone for the sidewalls and the front wall (behind the speakers), they would intersect. After you complete this procedure for the other loudspeaker, you will now have two rectangles, one on the floor on either side of the room.

Section 3.2—Room Acoustics

Note: The following section contains general information on room acoustics and loudspeaker/room interaction. The concepts outlined below are equally relevant when dealing with multi-channel audio or home theater. The careful application of these concepts, as you evaluate the acoustical characteristics of your own room configuration, will allow you to optimize the performance of your Center Series 3.

Slap Echo

Probably the most obnoxious form of reflection is called "slap echo." With slap-echo, primarily midrange and high frequency sounds reflect off of two parallel hard surfaces. The sound literally reverberates back and forth until it is finally dissipated over time. You can test for slap echo in any room by clapping your hands sharply in the middle of the room and listening for the characteristic sound of the echo in the midrange. Slap echo destroys the sound quality of a stereo system in two ways:

It adds harshness to the upper midrange and treble by storing time-domain smearing energy.

It destroys the delicate phase relationships, which help to establish an accurate soundstage.

Slap echo (see Figure 1) is a common acoustical problem in the typical domestic listening room because most of these rooms have walls with a hard, reflective nature, only occasionally interrupted by curtains, wall art, or drapes. The best (but least practical) solution to eliminate slap echo is nonparallel walls. This is because, rather than support slap-echo, nonparallel walls allow the sound to diffuse. This approach can be accounted for during the construction process. For existing rooms, slap echo can also be controlled entirely by the application of absorptive materials to the hard surfaces. These are absorp-

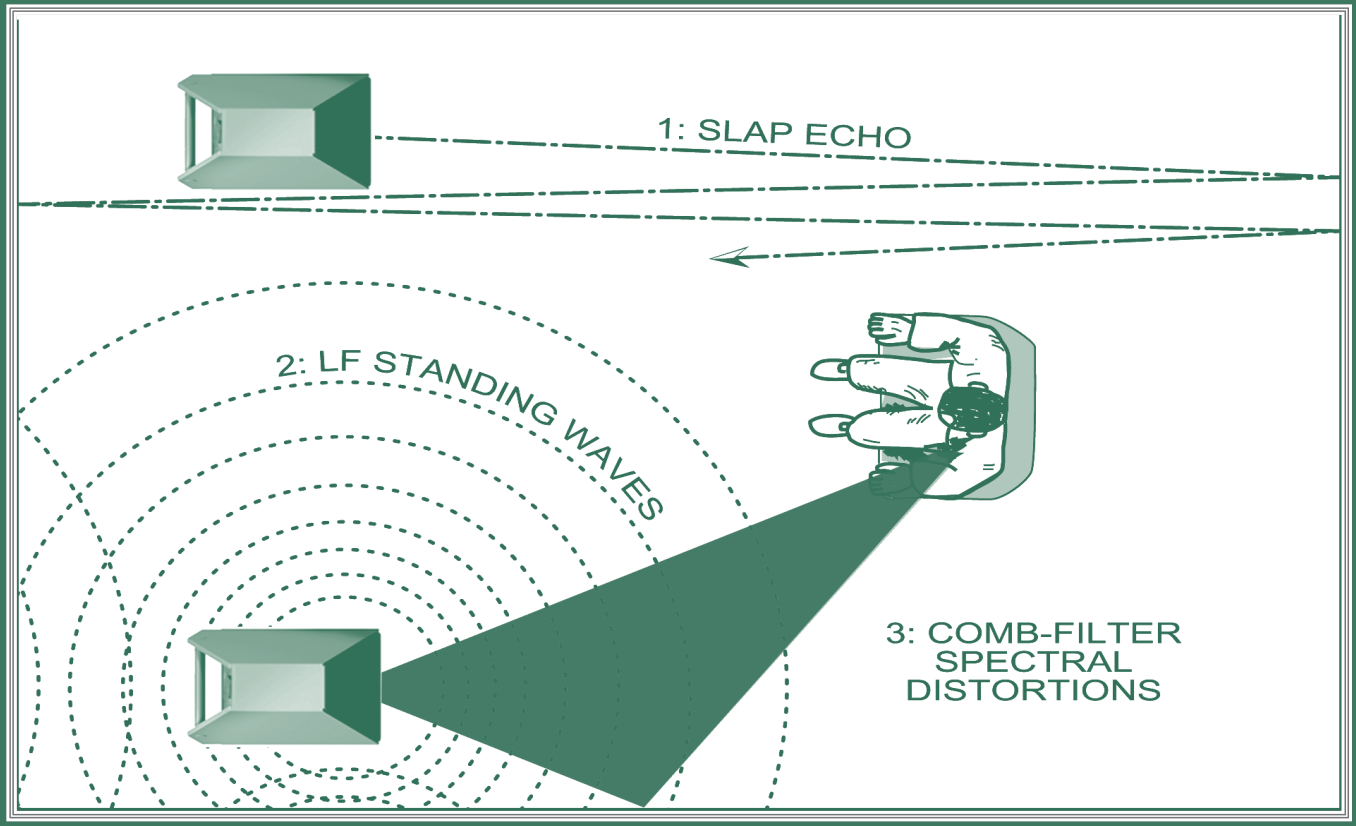


Figure 6 – Common Room Reflection Problems

tive materials that can be used to ameliorate slap echo:

Illbruck Sonex®

Air duct board

Large ceiling to floor drapes

Carpeting to wall surfaces

In many domestic listening environments, heavy stuffed furnishings reduce slap echo somewhat. Unfortunately, their effectiveness is not predictable. Diffusers are sometimes also used to very good subjective effect, particularly in quite large rooms. Sound absorbent materials such as described above will alter the tonal characteristic of the room by making it sound "deader," less "bright and alive," and "quieter." These changes usually make the room more pleasant for conversation, but sometimes render it too dull in the high frequencies to be musically involving. Soundtrack effects will be more localized. However, over-damping the room skews the tonal balance unnaturally toward the bass, and also compresses dynamics, robing the system of musical life excitement.

Diffusers, on the other hand, do not affect the tonal balance characteristic of the room as much. Placed properly, diffusers create a smoother and more open sound. Some diffusers, due to their construction, create narrow midrange peaks and suck out the warmth region. Do not use diffusers on the wall behind the speakers or on the sidewalls directly beside the speakers. It is our experience that all of these room treatment devices should be used judiciously.

Standing Waves

Another type of reflection phenomenon is "standing waves." Standing waves cause the unnatural boosting or accentuation of certain frequencies, typically in the bass, to be

found at certain discreet locations in the room. These locations differ according to room dimension and size. A room generating severe standing waves creates difficulty in setup. In these rooms, the speaker will sound radically different as it is moved around. The effects of standing waves on a loudspeaker's performance are primarily in the areas listed.

Tonal balance

Resolution of low-level detail

Soundstaging

Standing waves are more difficult to correct than slap echo because they tend to occur at a lower frequency. Absorbent materials, such as Illbruck Sonex®, are ineffective at controlling reflections in the bass region. Moving speakers about slightly in the room is, for most people, their only control over standing waves. Sometimes a change of placement of as little as two or three inches can dramatically alter the tonal balance of a small system.

Fortunately, minor low frequency standing waves are well controlled by positioning ASC Tube Traps™ in the corners of the room. Very serious low frequency accentuation usually requires a custom-designed bass trap system.

Low frequency standing waves can be particularly troublesome in rooms constructed of concrete or brick. These materials trap the bass in the room unless it is allowed to leak out of the room through windows and doors.

In general, placement of the speaker in a corner will excite the maximal number of standing waves in a room and is to be avoided for most direct radiator, full-range loudspeaker systems. Some benefit is achieved by placing the stereo pair of loudspeakers slightly asymmetrically in the listening room. This is so the standing waves caused by the distance between one speaker and its adjacent walls and floors are not the same as the standing wave frequencies excited by the dimensions in the other channel.

Comb Filter Effect

The "comb filter" effect is a special type of standing wave noticeable primarily at higher frequencies and shorter wavelengths.

Acoustical comb filtering occurs when sound from a single source, such as a loudspeaker, is directed toward a microphone or listener from a distance. The first sound to reach the microphone is the direct sound, followed by a delayed, reflected sound. At certain frequencies, cancellation occurs because the reflected sound lags in phase relative to the direct sound. This cancellation is most apparent where the two frequencies are 180 degrees out of phase. Further, there is augmentation at other frequencies where the direct and the reflected sounds arrive in phase. Because it is a function of wavelength, the comb filter effect will notch out portions of the audio spectrum at linearly spaced intervals. Subjectively, comb filter effect evidences itself as follows:

Added roughness to the sound

Reduction of harmonic richness

Smearing of lateral soundstage image focus and placement

Comb filter effects are often caused by side wall reflections. They are best controlled by very careful speaker placement and by the judicious placement of Illbruck Sonex® or air duct panels applied to that part of the wall where the reflection occurs.

Section 3.3—Resonances

Resonance in listening rooms is generally caused by two sources:

Structures within the listening room.

The volume of air itself within the listening room.

Structural Resonance

Structural resonances are familiar to most people as buzzes and rattles, but this type of resonance usually only occurs at extremely high volume levels and is usually masked by the music. In many wood frame rooms the most common type of structural resonance problem is "booming" of walls and floors. You can test for these very easily by tapping the wall with the palm of your hand or stomping on the floor. Most rooms exhibit mid-bass "boom" when struck. The loudspeaker playing in the room also excites these resonances. To give you an idea of what the perfect wall would sound like, imagine rapping your hand against the side of a mountain. Structural wall resonances generally occur in the low to mid-bass frequencies and add a false fullness to the tonal balance. They, too, are more prominent at louder levels, but their contribution to the sound of the speaker is more progressive. Rattling windows, picture frames, lamp shades, etc., can generally be silenced with small pieces of caulk or with blocks of felt. However, short of actually adding additional layers of sheet rock to flimsy walls, there is little that can be done to eliminate wall resonances.

Volume Resonance

The physical dimensions and volume of air in a room will also support standing wave modes and resonances at frequencies determined by the size of that room. Larger rooms will resonate at a lower frequency and have more complex (better) modal distributions than will smaller rooms. Volume resonances, wall panel resonances, and low frequency standing waves combine to form a low frequency coloration in the sound. At its worst, it is a grossly exaggerated fullness, which tends to obscure detail and distort the natural tonal balance of the speaker system.

Occasionally, however, there is just enough resonance to give a little added warmth to the sound – an addition some listeners prefer. Careful placement of loudspeakers in the room can dramatically reduce the speakers' destructive interaction with low frequency modes. ASC Tube Traps™ are effective in reducing some of this low frequency room col-

oration. Custom designed bass traps, such as perforated Helmholtz resonators, provide the greatest degree of low frequency control.

Section 3.4—Your Room

Room Shapes

Standing waves are pressure waves propagated by the interaction of sound and opposing parallel walls. This interaction creates patterns of low and high acoustical pressure zones that accentuate and attenuate particular frequencies. Those frequencies are dependent on room size and dimension.

There are three basic shapes for most rooms: square, rectangular, and L-shaped (see Figure 2).

A perfectly square room is the most difficult room in which to set up speakers. By virtue of its shape, a square room is the perfect medium for building and sustaining standing waves. These rooms heavily influence the music played by loudspeakers, greatly diminishing the listening experience.

Long, narrow, rectangular rooms also pose their own special acoustical problems for speaker setup. They have the ability to create several standing wave nodes, which will have different standing wave frequency exaggerations depending on where you are sitting. Additionally, these long rooms are often quite lean in the bass near the center of the room. Rectangular rooms are still preferred to square rooms because, by having two sets of dissimilar length walls, standing waves are not as strongly reinforced and will dissipate more quickly than in a square room. In these rooms, the preferred speaker position for spatial placement and midrange resolution would be on the longer walls. Bass response would be reinforced by speaker placement on the short walls.

In many cases, L-shaped rooms (see Figure 2) offer the best environment for speaker setup. Ideally, speakers should be set up along the primary (longest) leg of the room. They

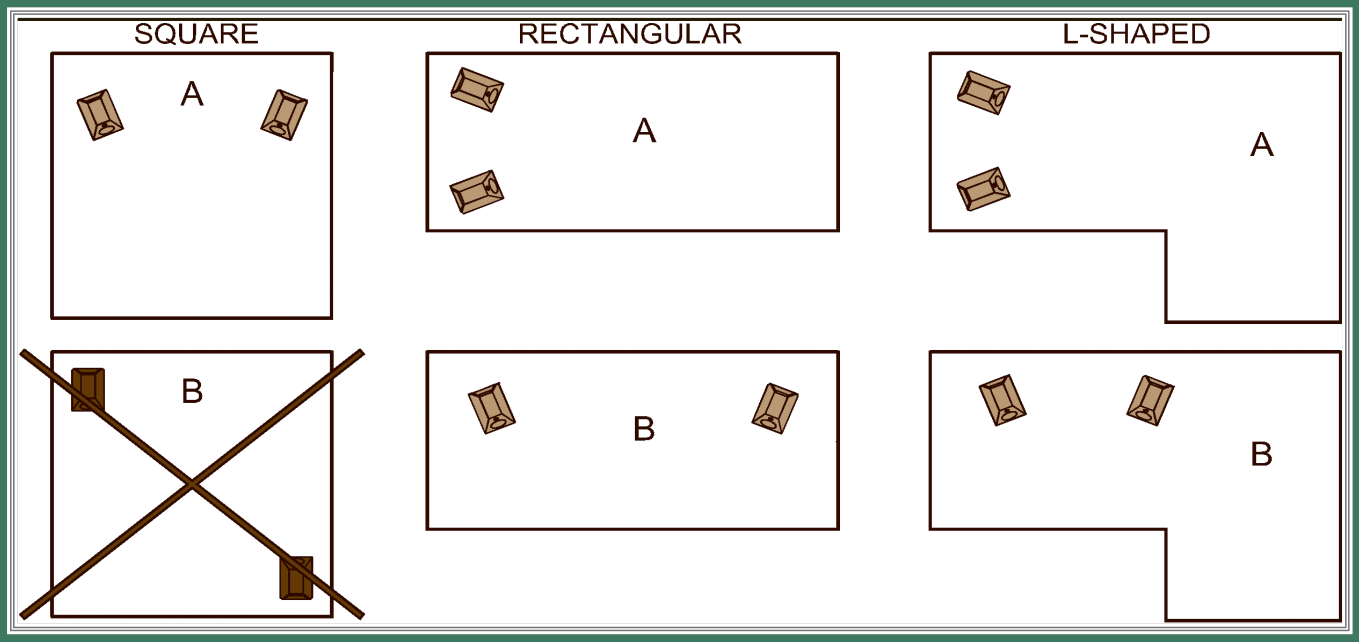


Figure 7 – Possible Loudspeaker Placement within Various Room Shapes

should fire from the end of the leg (short wall) toward the L, or they should be along the longest wall. In this way, both speakers are firing the same distance to the back wall. The asymmetry of the walls in L-shaped rooms resists the buildup of standing waves (see Figure 2).

Speaker Placement Versus Listening Position

The location of your listening position is as important as the careful setup of your Wilson Audio loudspeakers. The listening position should ideally be no more than 1.1 to 1.25 times the distance between the tweeters on each speaker. Therefore, in a long, rectangular room of 12′ x 18′, if the speaker tweeters are going to be 9′ apart, you should be sitting 9′11″ to 11′3″ from the speaker. This would be more than halfway down the long axis of the room.

Many people place the speakers on one end and sit at the other end of the room. This approach will not yield the finest sound. Carefully consider your listening position. Our experience has shown that any listening position that places your head closer than 14″

from a room boundary will diminish the sonic results of your listening.

Speaker Orientation

Speaker placement and orientation are two of the most important considerations in obtaining superior sound. The first thing you need to do is eliminate the sidewalls as a sonic influence in your system. Speakers placed too close to the sidewalls will suffer from a strong primary reflection. This can cause out-of-phase cancellations, or comb filtering, which will cancel some frequencies and change the tonal balance of the music. The Wilson Audio Setup Procedure (Section 2.1) is the best method with which to position your loudspeakers. Start with the speakers about 18" from each wall (as measured from the rear of the enclosure) and, if you need to move them relative to the side wall, move them away from the wall, not closer.

A very important aspect of speaker placement is how far from the back wall to place the speakers. The closer a loudspeaker is to the back wall, the more pronounced the low bass energy and centering of the image will be. However, this comes at a definite reduction in stage size and bloom as well as a deterioration of upper bass quality. You must find the proper balance of these two factors, but remember, if you are partial to bass response or air and bloom, do not overcompensate your adjustments to maximize these effects. Overcompensated systems are sometimes pleasing in the short-term, but long-term satisfaction is always achieved through proper balance.

Center Channel

After determining the general area for the Left and Right channels, determine the best place for your Center channel. The following center channel configurations are possible:

- On the floor with the speaker angled up towards the listener.
- Mounted on a stand with no upward rotation.

- Mounted on a stand with longer spikes in the front of the stand and shorter spikes in the back, allowing the stand and speaker to be rotated up toward the listener.

- Mounted upside down on the ceiling above the screen, angled down towards the listener.

With the exception of Center channels mounted on the ceiling, each of these options allow for some fine-tuning of the Center channel placement. If you are mounting the Center channel on the ceiling, be sure to choose the location carefully as, except for the tweeter adjustment, you will not be able to easily adjust the Center once it is mounted. A poor placement of the Center channel will hamper its integration with the rest of the system. As a general rule, the distance from the main Left and Right channels, as well as the Center channel (as measured from the tweeters) should be equal in their relationship to the listening position. This maintains the time coherence of the three front loudspeakers. Ultimately, the Center channel phase delay correction will be made via the sliding tweeter module.

Wilson recommends that the Center channel be positioned as centrally between the Left and Right speakers as possible. Using the Wilson Audio Setup Procedure, experiment with the fore to aft placement of the Center channel. This process will help you find the location that offers the smoothest left, right, and center channel integration.

Surround Channel

Wilson Audio has done everything possible to eliminate the boundary interactions caused by mounting a speaker onto the wall. The mounting bracket allows for significant improvements in detail, speed, and clarity. The Surround channels will perform well in almost any location in which they are placed. The mounting bracket and the careful design of the Surround channel have eliminated most of the sonic problems encountered when placing a standard speaker too close to a boundary. Nevertheless, we have performed ex-

tensive testing on the Surround channel and found that significant improvement on speaker linearity and integration can be achieved by careful selection of the Surround channel mounting location.

We realize that the location of the Surround channel is generally set by the architecture of the room. However, if you have some flexibility in locating your Surrounds, we suggest that you use WASP to find the Zone of Neutrality. Be sure to listen for room modes and frequency response peaks or dips.

WATCH Dog Passive Subwoofer

Because the WATCH Dog's frequency range is limited to the sub-frequency bass range, its placement requirements are slightly different than for a full frequency speaker. The ideal position of the WATCH Dog passive subwoofer is somewhat dependent on its primary use. In home theaters, where the WATCH Dog is used as the Low Frequency Effects (LFE) channel, it may be located in a variety of positions, depending on architectural considerations. In general, the lower frequency range will be reinforced by room boundaries and corners. Since most of the information contained in the LFE channel is in the sub-frequency bass range, with little information in the mid and upper bass, there are some advantages to placing the WATCH Dog near the room boundaries or near a corner. Some care is needed to avoid introducing upper-bass colorations caused by corner placement. While surround processors provide the low frequency equalized signal for the LFE Channel, it has been our experience that in some systems it is desirable to use the Low Pass crossover (via the Wilson Controller) to additionally limit upper bass range. This is particularly important and useful when the WATCH Dog is placed in the corner. Since all Wilson Audio Speakers are phase and time coherent, it is very important to time align the WATCH Dog in the room using the Phase Control on the Controller (see Controller owner's manual).

Section 4—Initial Setup

Note: Before setting up the WATCH Center Series 3, study carefully Section 3, "In Your Room." It provides valuable information on determining the ideal room location for your speakers.

Section 4.1—Final Setup

Preparation

You will need the following items:

- Supplied hardware kit
- Tape measure
- Known listening position

Your dealer is trained in the art and science of the Wilson Audio Setup Procedure (WASP) outlined in Section 3, and Wilson Audio recommends dealer installation of your new loudspeaker.

Section 4.2—Center Channel Spikes

The Center channel comes with 2 sets of spikes with a nut, a diode and spacers, and two sets of spikes with only the spike and nut. This will allow the speaker to be tilted to a variety of angles. These spikes also provide acoustical isolation as well as optimal height placement for your speakers. There are three ways of assembling the spikes (without diodes, without spacers, or with one or two spacers), and your choice will depend on the location of the Center channel and personal tastes. While the Center Series 3 baffle is designed to angle upward toward the listener, the spacers are provided to allow for additional rotation of the Center, such as for installations where the listening position is close to the loudspeakers. If the speaker is floor mounted, additional upward tilt may be desirable so the drivers are firing towards the listener. If the speaker is mounted above the listening ear

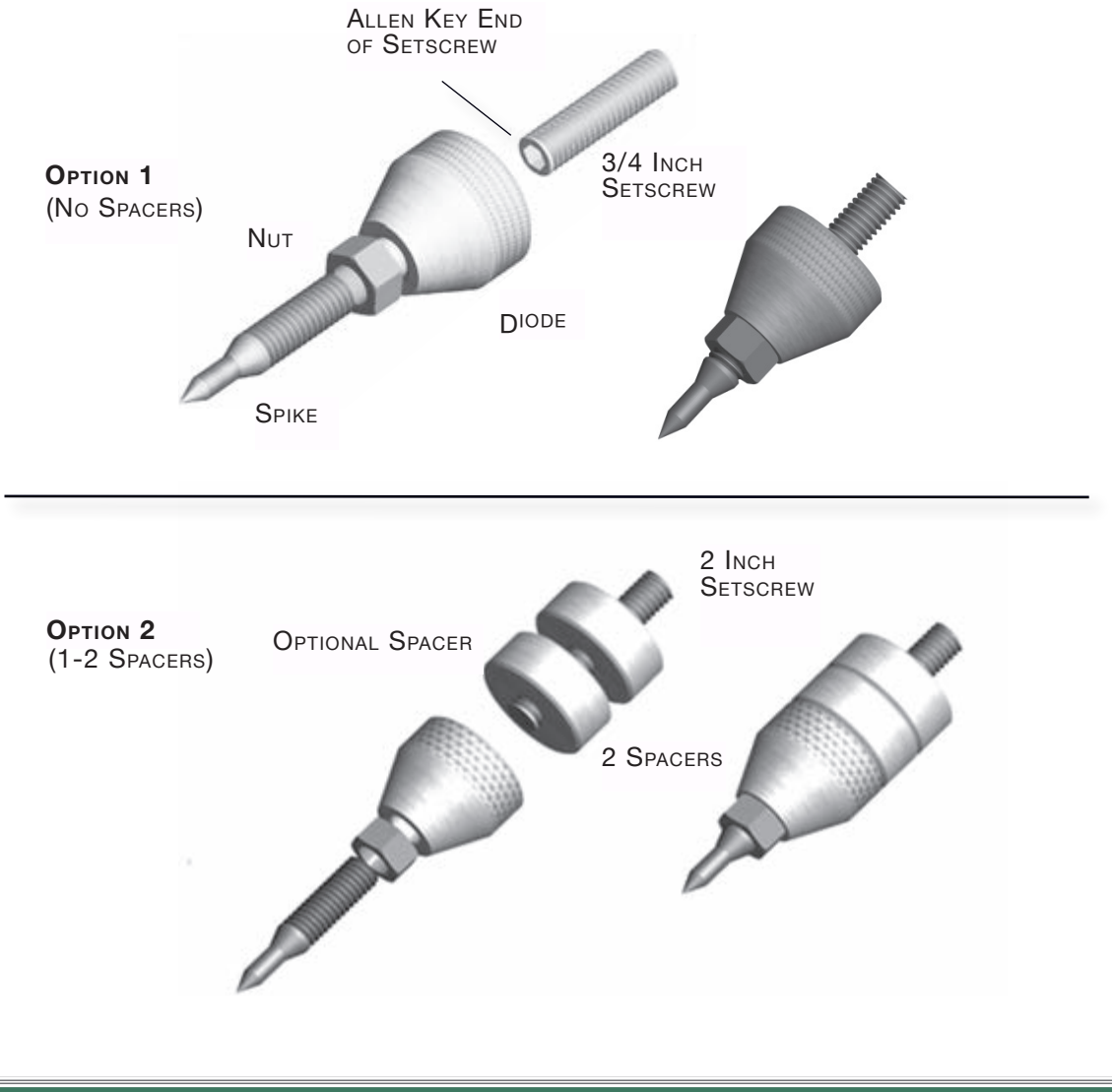


Figure 8 – Center Channel Spikes Assembly Diagram

height, it will need to be raised more in the back so the speaker is firing down toward the listener.

After determining the required rotation for the Center channel, Sections 4.3-4.6, assemble the spikes as follows:

Assembly

1. Back out the setscrews on the bottom of the enclosure to the desired height (see Figure 7) . Make sure the Allen key end is accessible.

2. If required, place the corresponding number of spacer discs over the bolt.

3. Screw the acoustical diode onto the bolt until it is roughly halfway into the diode.

4. Screw the spike (with nut) all the way in until it just touches the bolt. Do not tighten the nut at this time.

5. Repeat steps 1—4 with the other spikes.

Section 4.3—Measured Listening Position

Room Setup

The Center channel allows for different listening distances (away from the speakers) and listening ear heights (measured distances from the floor up to your ear); see Figure 8 below. Propagation Delay Correction accuracy of the Center channel has been established and verified at Wilson Audio's R&D laboratory. The tables outlining the settings for adjustments are in Section 10 of this owner's manual. The correction tables used in this section are a result of this testing. For each distance/ear height combination there is a unique alignment geometry. To make correct in-home setup of the Center channel possible without test equipment, Wilson Audio has measured the correct geometric PDC (phase delay correction) alignment for different distance/ear height combinations. By measuring the ear height and the distance from the speaker to the listening position, you will be able to align the system for your listening position.

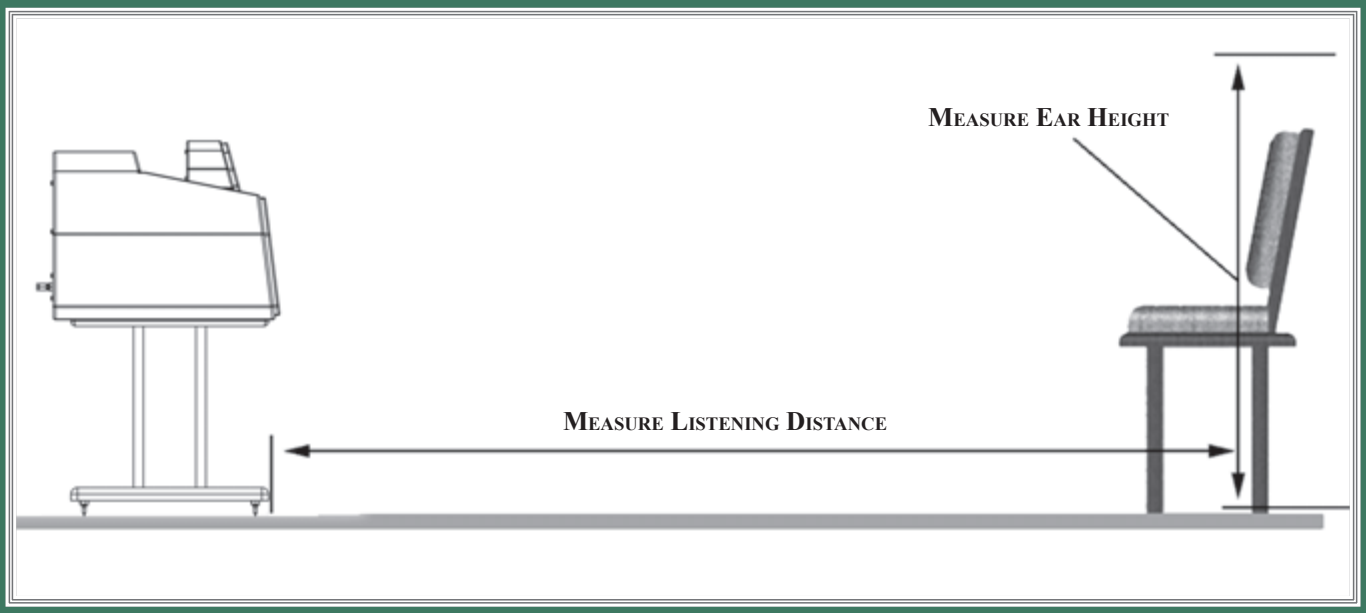


Figure 9 – Measured Listening Distance and Ear Height

Center Channel Configurations

The WATCH Center Channel has been designed to accommodate most any mounting location. These locations, in order of preferred location, are as follows:

#1 Center Channel on Stand (Recommended Location)

#2 Center Channel on Floor

#3 Center Channel on Custom Stand or Shelf

#4 Center Channel on Ceiling

The Center Channel crossover has been optimized for use with the Center stand. This is the preferred location. When you mount the Center channel in most other locations you will begin to see more boundary interactions, which may alter the performance of your the speaker. Nevertheless, the Center channel will certainly out-perform any other Center channel placed in a given location.

Placing the WATCH Center Series 3 in any location other than on the Wilson Audio WATCH Center stand will require the Center channel to be rotated towards the listening

position. This will allow the Center channel to take advantage of the propagation delay correction technology (PDC). Simply placing the Center in a location without following the directions below will hinder the performance of the Center channel. With the correct PDC you will find the vocals and dialogue more realistic and satisfying. As with any component in your system that offers increased resolution and detail, a careful setup is required.

There are four different setup procedures depending on your Center channel location. The possible Center channel configurations are as follows:

Section 4.4—Setup #1 Center Channel on Floor

Section 4.5—Setup #2 Center Channel on Stand

Section 4.6—Setup #3 Center Channel on Custom Stand or Shelf

Section 4.7—Setup #4 Center Channel on Ceiling

Please proceed to the indicated section for your particular installation for detailed setup instructions.

Section 4.4—Setup #1 Center Channel on Floor

The floor mounted Center channel must be rotated up toward the listening position. This is done by using a taller spike in the front than in the back of the speaker (see Figure 9). The default rotation is set by using a combination of a spike, nut, and a diode. If required, additional rotation can be achieved by using the provided 1/2″ spacers between the diode and the bottom of the cabinet (see Figure 7). The amount of rotation depends on your listening position.

Set the rotation as follows:

1. Using provided 3/16 Allen wrench, remove the back two setscrews from the bottom of the Center channel. Insert the spike with nut in their place. Turn to Section 10, table 1, locate your listening position on the table.

2. Assemble the front spikes with the listed diode/spacer combination in Table 1 (see also Figure 7).

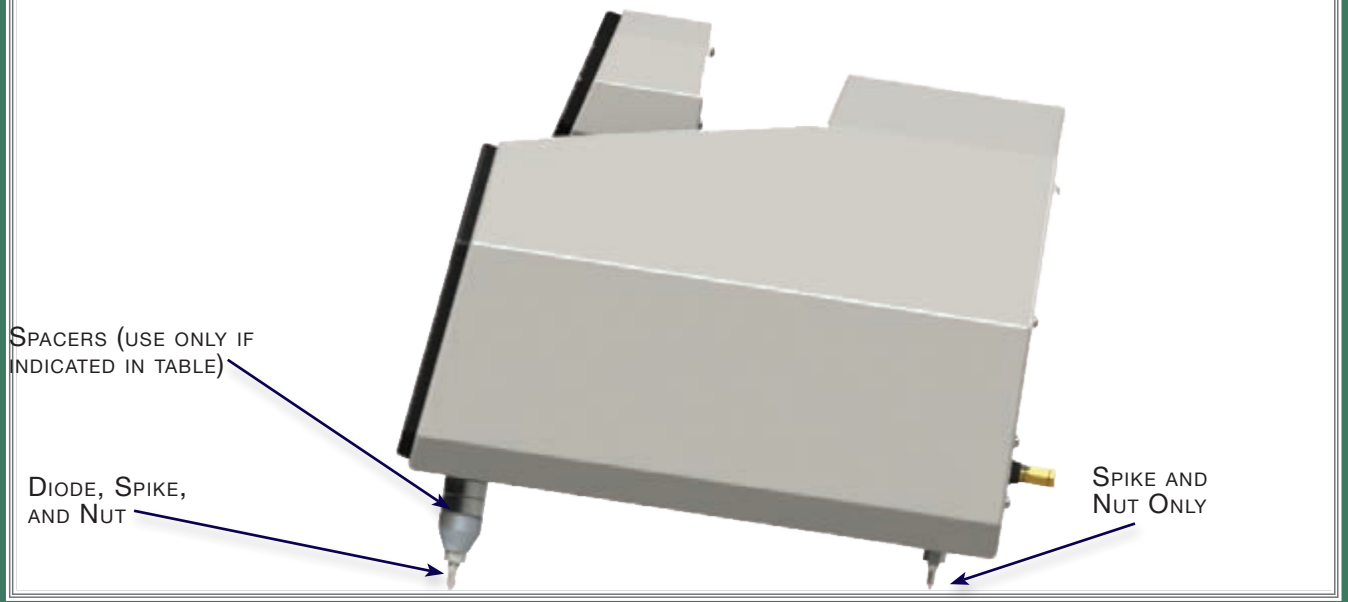


Figure 10 – Installing the Center Channel Spikes

3. Install the spikes as shown in Figure 9 above.

Note: the material used for the bottom of the Center channel Wilson's proprietary high density composite X-material. While very hard, X-material is easily cross threaded when installing the spikes. Be careful that the spike thread is engaging properly into the bottom.

10. Carefully lift the Center channel into the desired location and set it down.

Note: 4 small brass disks have been provided for use as spike pads. Place these under the spikes to protect the finish of your floors.

11. Turn to Section 4.8 for final assembly instructions.

Section 4.5—Setup #2 Center Channel on Stand

1. Set the stand in the desired listening location.

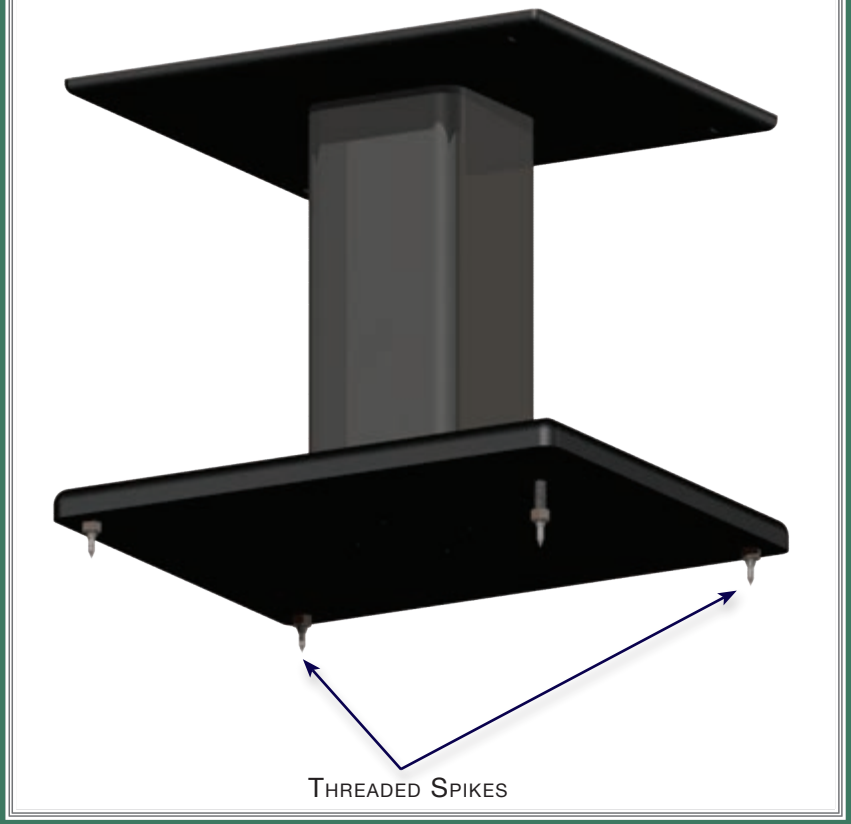


FIGURE 11 – INSTALLING THE CENTER CHANNEL STAND SPIKES

2. Attach the spikes to the bottom of the stand by screwing the spike and nut combination until the nut is flush with the bottom (See Figure 11).

Note: Do not tighten the nut at this time. Wait until the fine-tuning has been completed for the entire system and the speaker has been leveled.

Note: Four small brass disks have been provided for use as spike pads. Place these under the spikes to protect the finish of your floors.

3. Using provided 3/16 Allen wrench, remove the 4 setscrews from the bottom of the Center channel. Keep these as they are the setscrews needed to assemble your spikes and may be required during final setup.

4. Bolt the Center channel to the stand using the four 3/8 – 16 threaded socket head cap screws and washer provided (see Figure 11).

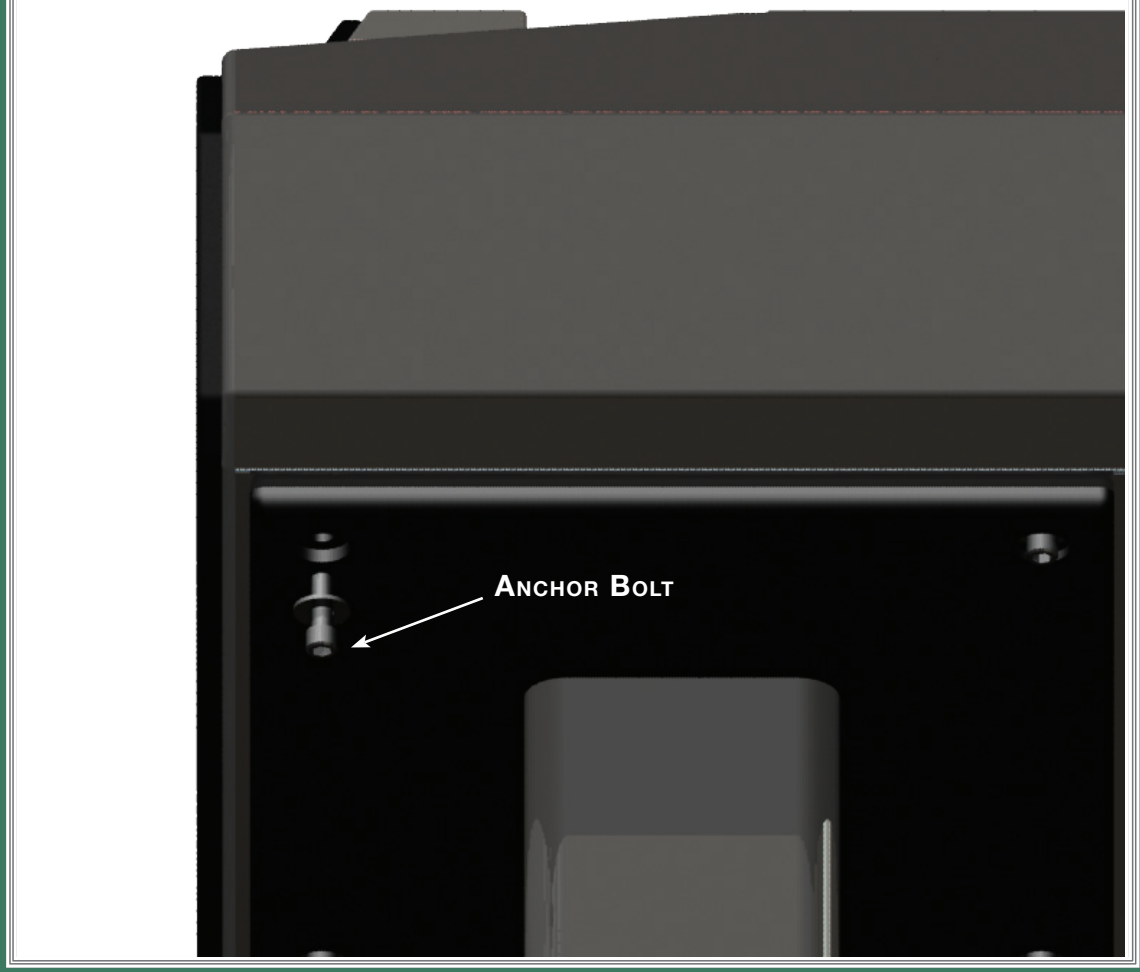


Figure 12 – Bolting the Center Channel to the Stand

Note: Do not overtighten the bolts; a snug fit is all that is required to secure the Center Channel to the stand.

5. Turn to Section 4.8 for final assembly instructions.

Section 4.6—Set Up #3 Center on Custom Stand or Shelf

The WATCH Center Series 3 is a non-shielded speaker and therefore, should NOT be placed near a CRT television. However, the Center channel can be placed near plasma or LCD televisions.

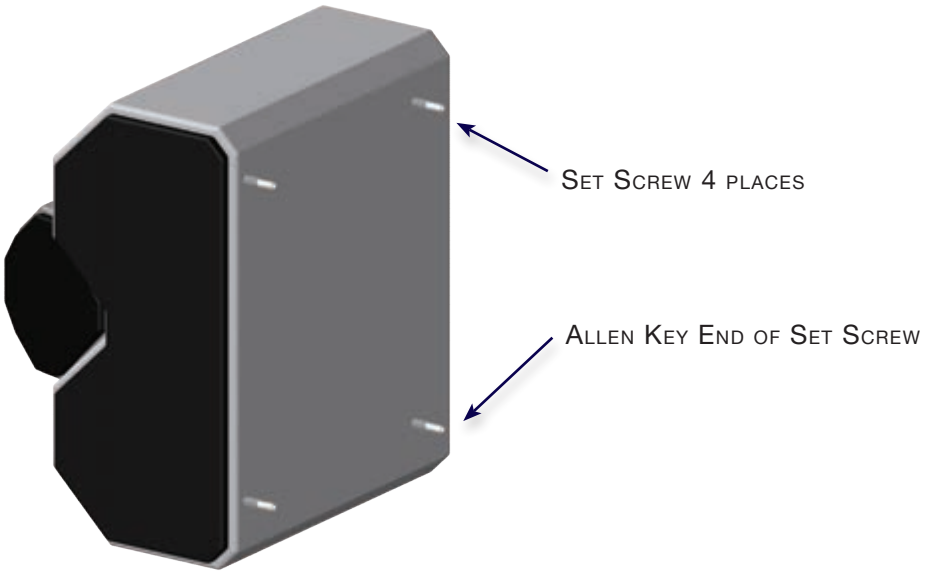


FIGURE 13 – LOCATING THE SET SCREWS

We recommend that you have a custom shelf built that allows the Center channel to be bolted securely above the screen and rotated down toward the listening position. Section 11 contains the requirements for this bracket. The speaker should be rotated so that the midrange drivers are firing just below the listening position. Once you have made and mounted the custom bracket, setup the Center channel as follows:

1. Lay the Center channel onto its side.

2. Using the provided 3/16 Allen wrench, back out the 4 setscrews from the bottom of the Center channel to the desired length.

Note: Be sure that the Allen key end of the setscrew is facing out.

3. Carefully lift the Center channel and set the threaded setscrews into the 4 mounting holes located on the top of the mounted custom shelf.

4. Using the provided 3/8 – 16 nut, bolt the Center channel to the mounting bracket.

5. Turn to Section 4.8 for final assembly instructions.

Section 4.7—Setup #4 Center Mounted to Ceiling

Note: Wilson Audio does not provide additional hardware for the optional ceiling mount location of the Center channel. The Wilson customer choosing this option will need to obtain hardware him or herself.

The Center channel has four 3/8-16 threaded holes on the bottom of the speaker. These holes can be used to bolt the Center channel to a custom made bracket (not provided) that is attached to the ceiling. Please see Section 11 for the requirements of this custom

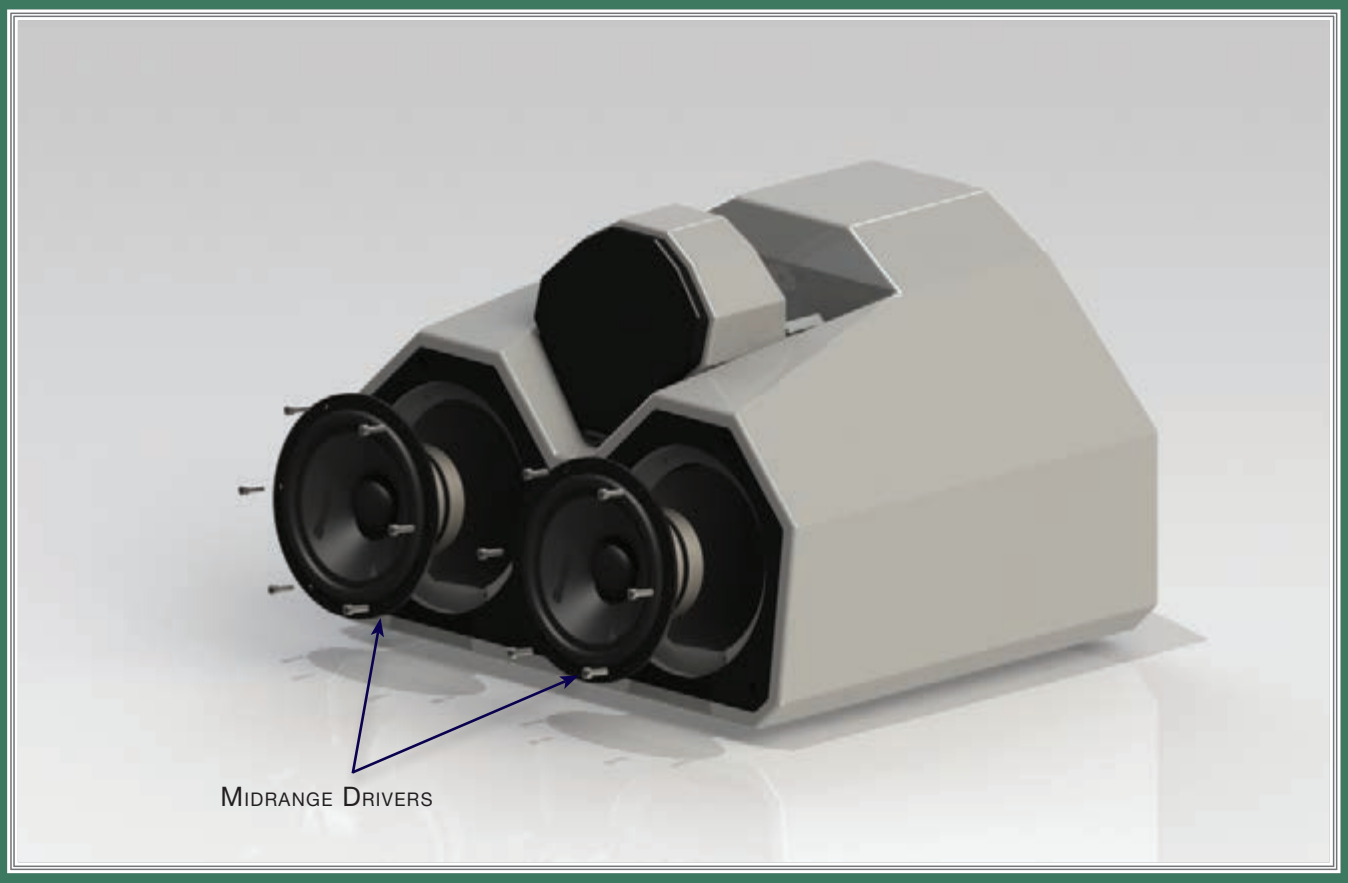


Figure 14 – Mounting Center Channel to Ceiling

bracket. The hardware used to install the Center channel on its custom ceiling mount is not provided by Wilson Audio. Once the bracket is made and mounted, follow these instructions to bolt the Center channel to the ceiling as follows:

1. Set the Center channel on the floor.

2. Using the provided 3/16 Allen wrench, remove the 4 setscrews from the bottom of the Center channel.

3. Lay the Center channel onto its side and screw the four 3 inch setscrews 1 inch into the threaded holes on the bottom of the speaker.

Note: Be sure that the Allen key end of the setscrew is facing out when screwing it into the enclosure. This will allow for easy installation and removal in the future.

4. Using the 5/32″ Allen wrench, remove the 2 midrange drivers. Do not unsolder the leads (see Figure 13).

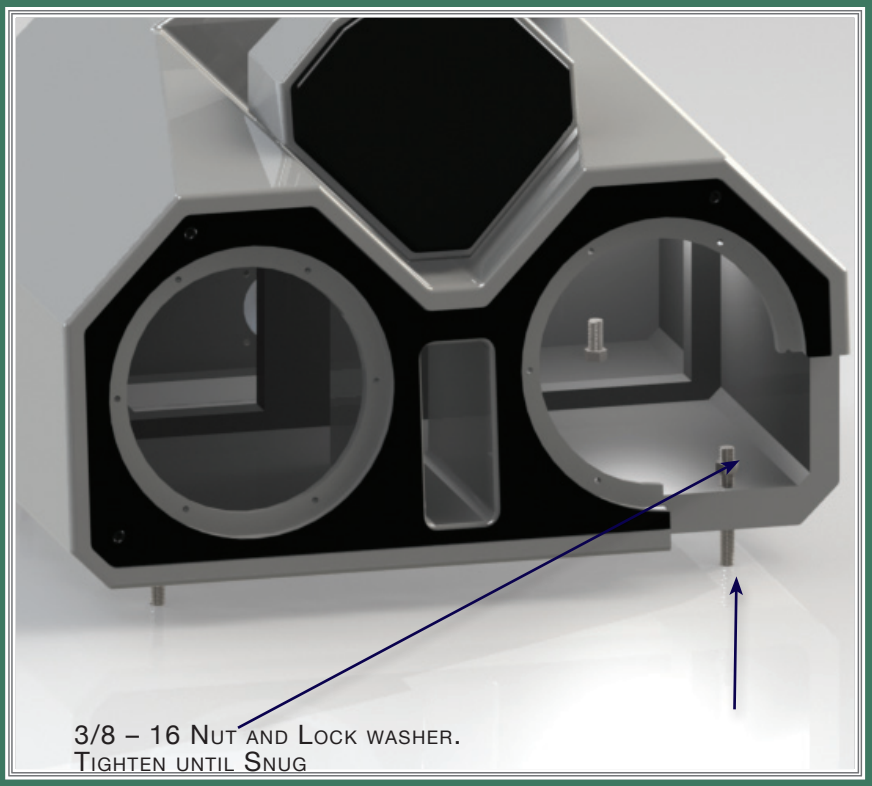


Figure 15 – Installing Nut and Lock washer from the Inside

Note: the material used for the bottom of the Center channel Wilson's proprietary high density composite X-material. While very hard, X-material is easily cross threaded when installing the spikes. Be careful that the spike thread is engaging properly into the bottom.

5. Screw the 3/8-16 nut and lock washer onto the setscrew from the inside of the enclosure (see Figure 14).

6. Tighten until snug using the open-ended wrench.

7. Replace the midrange drivers.

8. While two people hold the speaker up to the mounting bracket, a third person bolts the speaker to the ceiling. Use two 3/8-16 nuts on each threaded rod. This will lock the nuts into place.

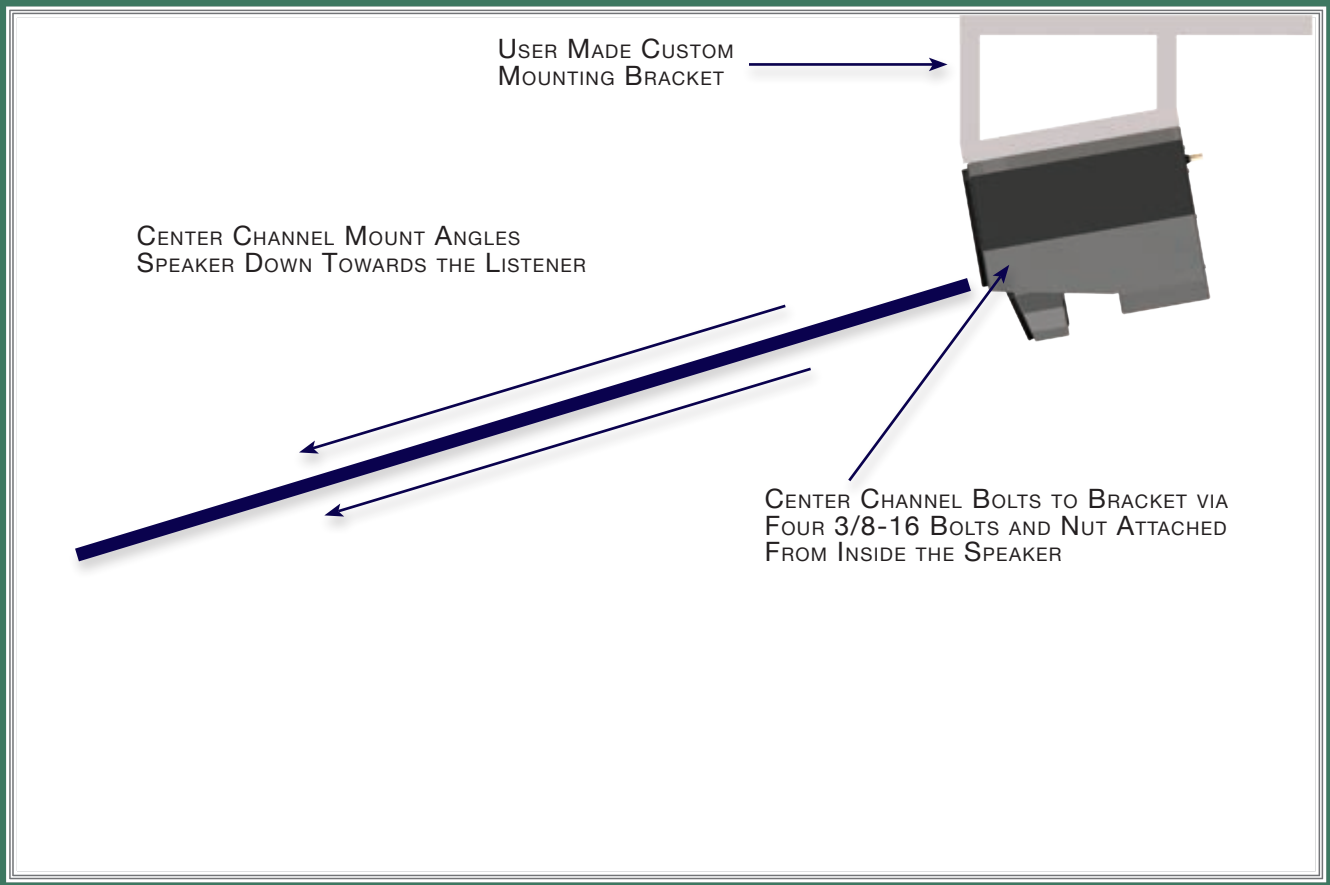

User Made Custom
Mounting Bracket
Center Channel Mount Angles
Speaker Down Towards the Listener
Center Channel Bolts to Bracket via
Four 3/8-16 Bolts and Nut Attached
From Inside the Speaker

Figure 16 – Mounting Center Channel to Ceiling

Note: The custom mounting bracket should be designed to hold 3 times the weight of the Center channel (77 lbs). This gives and acceptable safety factor of 3.

9. Turn to Section 4.8 for final assembly instructions.

Section 4.8—Center Channel Final Setup

The final setup work needed before fine tuning and other speaker setup is performed as follows:

- Set the Propagation Delay Correction on the tweeter assembly (see Section 10).

- Connect the speaker cables from the amplifier.

The propagation delay correction is one of the most important elements of the setup. There are two methods for setting the PDC: one for floor and stand mounted Center channel and one for ceiling or any other custom location.

Stand or Floor Mounted Center Channel

1. Find your measured listening distance and ear height.

2. In Section 10, locate the table that corresponds to your Center channel location and front spike combination (i.e. floor mounted Center channel with a spike, nut, diode, and one spacer).

Note: There is a unique PDC setting for each Center channel location and front spike combination. Be sure you are reading from the correct table.

3. Read from the table the required offset (see Section 10).

4. Using a 3/16″ Allen wrench, loosen the 1/4-20 socket head on tweeter assembly (see Figure 16 below).

5. Slide the tweeter until the indicator line on lock down bolt washer is aligned

with the appropriate numbered line on the tweeter mounting bracket.

6. Retighten the socket head cap screws until snug.

Note: Be careful when loosening or tightening the screws that you do not damage the painted finish.

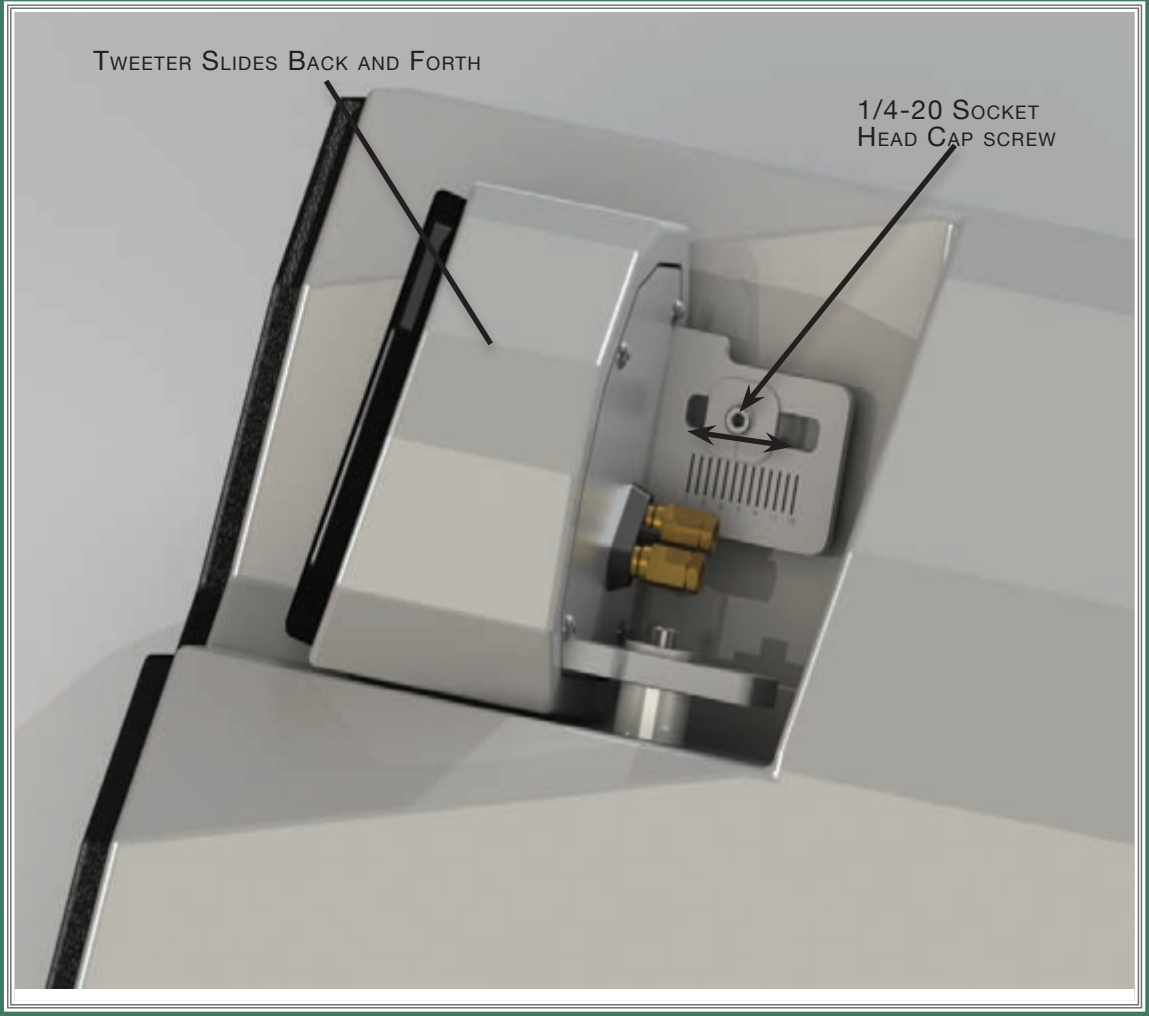


Figure 17 – Setting the PDC

Ceiling or Other Custom Location

Because of the large number of unique combinations for your location, we are unable to provide the exact alignment setting for you. If you have followed the instructions closely up to this point, you will be able to set the PDC by experiment. This is done as follows:

- Unhook all the speakers except the Center channel.
- Using a 3/16" Allen wrench, loosen the 1/4-20 socket head bolts that hold the tweeter in place.
- Play a sound track that has a female vocal.
- Sit in your listening location and have someone slowly slide the tweeter forward and backwards. Listen for the location that the female vocal is free from any chest or nasal sound. The vocals will be clean and clear, free from any veiling of the sound. This is the correct alignment position.
- Lock down the tweeter in this position.

Section 4.9—Connecting Speaker to Amplifier

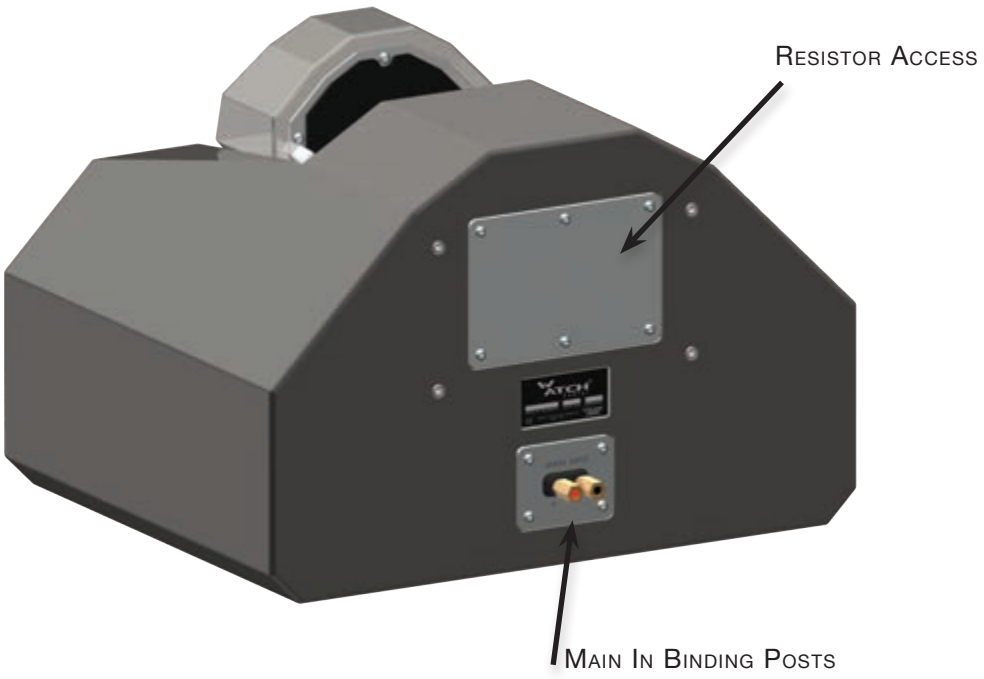


Figure 18 – Center Channel Cable Connection and Resistor Access

Speaker Cables

The high current input terminals located on the rear of your Center channel loudspeaker are color coded with a small plastic plug, so that RED (marked "+") corresponds to positive and BLACK (marked "-") to negative, common, or ground on the amplifier output. Be sure to connect the loudspeakers in phase with each other. We recommend the use of the very highest quality loudspeaker cables, particularly those designed for high frequency propagation correction and phase linearity. Beware of "zip cord" type speaker cables,

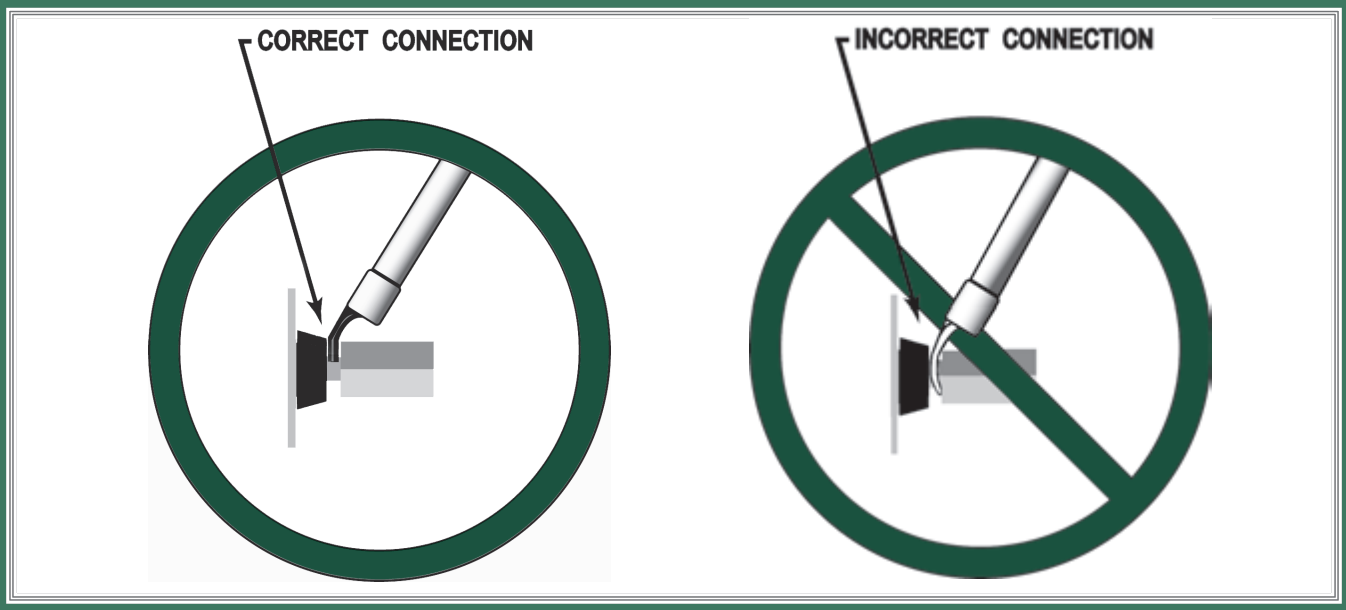


Figure 19 – Spade Lug Attachment

which will smear the sound and limit their effective bandwidth. Also, do not use braided litz-type loudspeaker cables as they will cause an unnatural brightness to the sound, compromise sound staging performance, and may cause instability, oscillation, and damage in wide bandwidth solid state amplifiers.

Spade Lugs

The spade lugs of some of the high quality cables often used with the Center channel

are *angled* to reduce pressures on the cable during installation. Avoid the instinct to push the cable's spade lug ends all the way into the Center channel's connectors (see Figure 17). Partial insertion of these *angled* spade lugs will actually improve the reliability of the connection. Flat lugs may be fully inserted to connectors before tightening.

Connection of the Center to the Power Amplifier

1. Turn off the power amplifier(s) and remove the AC power cord from the wall outlet.

2. Lay out the speaker cables before hooking them up to the Center channel. Make sure that there are no *kinks, twists,* or *right-angled bends* in the cable. If you need to turn corners, attempt to use a gradual curve as opposed to a severe right-angled bend.

3. Connect the negative (normally black) end of the speaker cable to the high current speaker binding post with the engraved "-" above it (see Figure 18).

Note: Do not overtighten the binding posts. Overtightening can cause the posts to break off.

4. Connect the positive (normally red) end of the speaker cable to the high current speaker binding post with the engraved "+" above it.

5. Plug your amplifier(s) AC power cord into the wall outlet.

Note: Always attempt to keep your set (LRC) of speaker cables the same length. This will ensure that the signals arrive at each speaker in the proper time frame, by traveling the same distance to each speaker.

Center Channel Setup Completed

This completes the initial setup of you Center channel. Final system tuning and voicing should be performed as outlined in Section 5. Section 5 will evaluate your entire speaker setup and allow you to make small modifications in speaker rotation and location that will greatly improve the performance of your multi-channel audio or home theater system.

WATCH Center

Section 5—Final Tuning and Voicing

WILSON AUDIO

Section 5.1—Final Tuning and Voicing

This loudspeaker placement method was developed by David A. Wilson, for Wilson Audio Specialties, Inc., to find optimum loudspeaker locations in any given room within one hour. Participating in numerous audio/multi-channel/home theater shows with very different and difficult acoustic environments necessitated this procedure. Currently, all Wilson Audio dealers employ this setup procedure for their customers, in order to quickly and predictably achieve the best performance from their systems (this procedure can be used successfully with ANY moving coil speaker system).

Proper system calibration is the most important step in the setup of your multi-channel/home theater system. The WATCH system offers increased resolution and overall system performance. This increased resolution allows you to fine tune your system, thus increasing overall performance, more than any other system available.

Fine tuning and "voicing" generally involve only small changes in location and rotation (or toe) of your multi-channel system. With proper calibration you will find that changes as small as 1 inch will have an impact on the performance of your system. The following sections will step you through this fine tuning process. The setup will be done as follows:

- Set up of Left and Right channels with all other speakers disconnected.
- Add the Center channel.
- Add the Surround channels.
- Add the Subwoofer.

Adding one speaker at a time will allow you to easily evaluate the integration with the system and make the necessary adjustments to fine tune the setup.

Section 5.2—Left and Right Channels

Determining Front to Back Distance

The proper setup of the left and right channels is crucial for optimum system performance. If these speakers are not set up correctly, the entire system will suffer from poor integration. Please follow these steps carefully:

- Place the speaker in an appropriate location relative to your screen and listening area. Make certain to remove the grills and spikes.
- Toe the speakers in so that you can just barely see the inside edge when seated in the primary listening position.
- Using removable masking tape, graph off the floor so that you can accurately move both speakers forward and backward in 1/2 inch increments.
- Place your multi-channel processor into stereo mode.
- Using a piece of full range music (dynamic with a lot of low frequency information) played at a moderately high level, take notes on the sound quality. Pay specific attention to upper and lower bass quality, dynamic contrasts, image height, and focus.
- Move the speakers back or forward in 1 inch increments and then 1/2 inch increments.

Note: Moving the speakers BACK will generally increase low bass, sharpen focus, lower image height, and increase dynamics up to the point where you go too far, in which case the sound will start to lose these qualities in addition to becoming boomy and slow sounding. Moving the speakers FORWARD will increase air and bloom, raise image height, and generally increase the sense of space. Moving too far forward will cause the soundstage to become unnaturally high with a lack of focus, dynamics, and low-end extension.

- Find the front to back location where the bass is tight, dynamics are correct, image is well-focused, and you find the best soundstaging. Mark this as your final front to back location.

Determining Side to Side Distance

The distance the speakers are from the side walls is very important. This distance determines the amount of comb filtering you will hear. In effect, you are "tuning" the comb filter interaction between the speaker and the wall. Perform the side to side analysis as follows:

- Place a piece of tape on the floor parallel to the front edge of the speaker and again mark off 1/2 inch increments side to side.

- Using only one channel/speaker at a time, now determine the optimum position with regard to side walls.

Note: A high quality, solo piano recording works well for this step.

- While music is playing, slowly move the speakers left or right 1 inch then 1/2 inch at a time until you achieve the best harmonic integrity.

You should not need to move the speaker any more than one inch left or right from the original location. Do this independently for each channel. What you will hear when the speaker moves into the correct location is a reduction of hardness and muddied harmonics from the piano.

Note: If you continue moving the speaker past this point, you will begin to hear again this fatiguing artifact.

When you have determined the optimum location for each speaker, mark it carefully, and make certain the toe-in is correct. When installing the spikes, the speakers may shift slightly, but you can move them precisely back to the correct location again using your tape markers.

Section 5.3—Integrating the WATCH System

Note: Many processors offer a setup guide that steps you through the integration of each of the speakers, specifically, setting speaker distances, delays, and phase rotation. These adjustments are made via internal electrical adjustments. We have found that actual geometric changes, that is, moving the speaker location and rotation, offer improved results when integrating speakers. We recommend that you follow the steps outlined below, evaluate your system performance, and then make adjustments in the processor. Ultimately, you will, of course, need to make level adjustments via the processor.

Integrating the WATCH Center

The next step in the setup process is to fine tune the location and rotation of the Center channel. Do as follows:

- Place the Center channel centered between the main speakers and even with the front inner edge. Set the spikes as indicated in Section 4.

- Follow the processor instructions on level adjustment. Adjust the level on the Center channel so it matches in level with the left and right channels. Do not be surprised if the Center channel requires 5-7 dB lower adjustment than the left and right channel.

- Make sure that only the front Left, Right and Center channels are connected.

- Determine the Center is connected with correct polarity. Using a pink noise generator, play pink noise through the Center channel together with alternating Left and Right channels. If the polarity is correct on the Center channel, you will hear the pink noise centered between the Center channel and either the Left or Right speakers. If the polarity is incorrect, you will hear two point sources that are unfocused and located at each speaker playing.

- With the Center channel spiked, put on a multi-channel audio track or mov-

ie scene with which you are familiar.

- Play the selection and listen for the integration with the main speakers. As the audio moves across the three front speakers, listen for a smooth transition from one speaker to the next. You should not hear any voids in the sound stage.

- Make 1/2″ changes in front to back location until you find the Center channel location that offers the best integration.

Image Height

Check the image height. Does the dialogue of a movie have the correct height? Is it too low or too high?

If needed, adjust the amount of rotation until the image height is correct. On a stand or floor mounted Center channel, raising the front spikes will raise the image height; lowering the front spikes will lower the image height. Where possible, we recommend that you add or remove a spacer to get the correct image height. This will allow the PDC to be reset using the tables in Section 10.

Center Rotation

Our testing has shown that a stand-mounted Center channel, at listening distances greater than 2-3 meters, requires the front of the Center channel to be raised about 1″. This is because the effects of comb-filtering are more noticeable the further you are away from the Center channel. This comb-filtering reveals itself as a

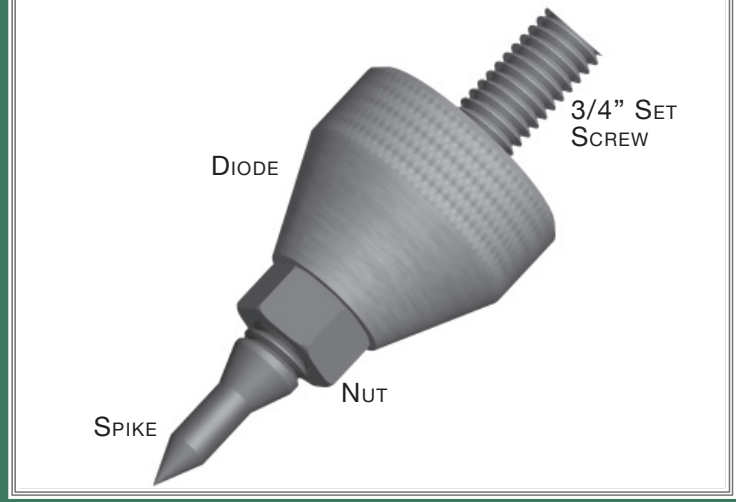


FIGURE 20 – SPIKE ASSEMBLY: DIODE NO SPACERS

slight nasal sound in the voice. If you notice this in the sound, you should raise the front spikes of your Center channel. This can be done by removing the front spikes and replacing them with the spike assembly as shown in Figure 19 below. Do as follows:

- Screw the spike and nut into the diode.
- Screw the 3/4" setscrew into the front spike holes in the stand.
- Thread the spike assembly onto the set screw.

Resetting the Propagation Delay correction (PDC)

Once the final rotation has been determined, you will need to reset the PDC. If you have raised the speaker by adding a diode or 1/2" spacer, read the PDC from the table that matches your current spike configuration in Section 10.

Every system has a unique time and phase character, which can affect the PDC accuracy. Because of this, you may find that sliding the tweeter forward or backwards one or two posi increases the clarity and correctness of your Center channel. If you like, experiment with the tweeter position and lock it in position when you find the location you feel to be most accurate.

Integrating the WATCH Surround Channels

- Follow the processor instructions on level adjustment. Adjust the level on the Surround channels so they match in level with the front channels.
- Play a DVD that has a scene with something moving around the room. Listen for the correct spacial imaging. A correctly adjusted Surround channel will have good imaging characteristics, will be seamlessly blended, and should be just as transparent as the front channels.
- Adjust the rotation of the Surround channel until you find the best integra-

tion.

Note: The Surround channel rotates on the upper two spikes. Examine carefully this rotation and the mounting bracket before trying to adjust the angle of rotation. Be careful when rotating the speaker as it is very heavy and could fall off of the mounting bracket.

Integrating the Passive WATCH Dog

The Passive WATCH Dog will perform well in almost any location in the room. In general, the closer you place the subwoofer to a wall or corner, the greater the augmentation of the bass. However, the increase in bass comes at a cost of perceived speed, dynamics and bass clarity. We recommend that you experiment with the placement of the subwoofer to find a balance of the above mentioned items with which you are satisfied. For complete information on integrating a Wilson Audio WATCH Dog, please refer to your subwoofer owner's manual.

WATCH Center

Section 6—Care of the Finish

WILSON AUDIO

Section 6.1—Care of the Finish

The WATCH Center Channel Series 3 loudspeaker is hand painted with WilsonGloss™ paint and hand polished to a high luster. While the finish seems quite dry to the touch, final curing and complete hardening takes place over a period of several weeks.

Dusting the WATCH Center

It is important that the delicate paint finish of the WATCH Center be dusted carefully with the dust cloth, which has been provided. We recommend that the following procedure be observed when dusting the speakers:

- Blow off all loose dust.
- Using the special dust cloth as a brush, gently whisk off any remaining loose dust.
- Shake out the dust cloth.
- Dust the finish, using linear motions in one direction parallel to the floor. Avoid using circular or vertical motions.

Because the paint requires a period of several weeks to fully cure, we recommend that no cleaning fluids, such as glass cleaners, be used during this initial period of time. When the paint is fully cured, heavy fingerprints and other minor smudges may be removed with a glass cleaner. Always use the dust cloth. Stronger solvents are not recommended under any circumstances. Consult your dealer for further information if required. To maintain the high luster of the finish, periodic polishing may be desired. We recommend a nonabrasive carnauba-based wax and a soft cloth.

Care of the Grills

Periodically, you will want to clean the WATCH Center's grills. This is best done by

using the round brush attachment on a vacuum cleaner hose. Gently vacuum the front surface of the grill. Be careful not to apply too much pressure. Do not use a hard plastic attachment against the grill. The grill cloth is stretched tightly over the grill frame. Too much pressure or use of a hard plastic attachment could cause the grill material to tear, especially in the corners.

Often Wilson speaker owners desire to change the look of their listening room by changing the color of their speaker grills. In addition to basic black, Wilson Audio offers a variety of grill colors to match most WilsonGloss finishes. Contact your local dealer for grill cloth samples or to order replacement grills for your WATCH Center channel.

Break-in Period

All audio equipment will sound best after its components have been broken in for some period of use. Wilson Audio breaks in all woofers and mid-range drivers for approximately 12 hours. All drivers are then tested, calibrated, and matched for their acoustical properties. In your listening room, expect 25 to 50 percent of break-in to be complete after two hours of playing music at normal listening levels. Ninety percent of break-in is complete after 24 hours of playing. Playing a CD on repeat overnight can accomplish this task quickly. Wilson Audio recommends chamber music for this task.

Section 6.2—Enclosure Technology

Materials

Wilson Audio has conducted many hours of research on the impact of materials on speaker enclosure performance. Through this effort, Wilson pioneered the use of non-resonant materials, first with the use of mineral-filled acrylic in the WATT and continuing with the further development of proprietary materials for X-1 Grand SLAMM and WATCH Dog. Even the best materials are not suited to all aspects of enclosure construction. Therefore, like all Wilson loudspeakers, the WATCH Center is constructed of several exotic materials

chosen for their specific performance attributes relevant to different portions of the enclosure.

The WATCH Center is constructed using non-resonant, high-density, composites which are then cross-braced to further reduce cabinet resonance. Each of these composites meets and exceeds the highest of ANSI test standards for its use, while offering very tight tolerances, high hardness, uniform density, and dimensional stability.

Adhesive

Wilson Audio has conducted exhaustive research into the best adhesives to permanently bond our speaker enclosures. This is often an overlooked element crucial to the proper performance of a loudspeaker. Correct modulus of elasticity, coefficient of thermal expansion, and natural frequency response are just a few of the important elements of adhesives.

A highly cross-linked, thermoset adhesive is used for the construction of the enclosure. It was also chosen for its excellent bond strength, solvent resistance, hardness, and optimum vibrational characteristics.

Section 6.3—Depth of Design

WATCH Center's compellingly authentic performance and lasting value are achieved through careful implementation of cutting edge design and engineering and then executed using the highest performance materials. Wilson Audio's use of proprietary enclosure materials and adhesives are employed to achieve truly exceptional speaker cabinet performance. The use of these materials in the WATCH Center results in an enclosure that is inherently inert and non-resonant. All of these structural aspects are combined, allowing Wilson Audio to deliver a product that maintains the strictest structural tolerances, durability, and reliability. This also means that the WATCH Center will have consistent, repeatable performance, unaffected by the climatic conditions, anywhere in the world. Finally, like all

Wilson products, the WATCH Center is hand-crafted with meticulous attention to detail, with an unwavering commitment to excellence. Thus, the WATCH Center Channel Series 3 will impart to her owner beauty and pleasure for many years to come.

WATCH Center

Section 7—Troubleshooting

WILSON AUDIO

Section 7.1—Troubleshooting:

Center channel is not operating:

Check the interconnects from the source.

Check the connections on the speaker cables, both at the amplifier and speaker ends. Watch especially for connectors touching each other.

Driver out or not playing after connections have been verified:

If you have found a driver with no output, turn off your amp and disconnect the speaker cable. Remove the access panel on the rear of the enclosure. **Note: The enclosures is quite heavy. Please use care when moving.**

Using the appropriate Allen key, open the door on the back.

You will find some resistor connections. Replace the resistor with the supplied matching resistor. Tighten the new resistor in the old one's place.

Note: Use only Wilson Audio replacement resistors in your WATCH Center. These resistors were carefully chosen for the overall sonic and thermal performance.

Amplifier shuts off as soon as it is turned on:

Plug your amplifier into the wall and turn it on.

Listen to the Center at a low level. The driver should now be operating correctly.

Check to see if your speaker cables are properly connected to the binding posts. Look for frayed ends, loose connections, or a conductor contacting the amplifier chassis.

Turn the amplifier off and disconnect it from the AC wall outlet. Disconnect the preamplifier leads to the amplifier. Now turn on the amplifier.

If the problem is solved:

There is likely something wrong with your preamplifier or interconnect. Contact your dealer.

If the problem persists:

Leave the preamp leads disconnected and continue to the next step.

Turn the amplifier off. Disconnect the speaker leads at the main input to the speaker. Now turn on the amplifier.

If the problem is solved:

Call your Wilson Audio dealer. There may be a problem with the crossover or the speaker's internal wiring.

If the problem persists:

Continue to the next step.

Turn the amplifier off and disconnect it from the AC wall outlet. Disconnect the speaker cable leads to the amplifier and turn the amplifier on again.

If the problem is solved:

You have a short in your speaker cables. Check for frayed ends, holes (from spike feet), or make sure that your spade lug is not touching the chassis while it is connected to the binding post.

If the problem persists:	Call the dealer where you bought your amplifier. You appear to have a problem with this component.

WATCH Center

Section 8—Repair Procedures

WILSON AUDIO

Section 8.1—Repair Procedures

Replacing an Open Resistor

The WATCH Center channel has a resistor that will protect the tweeter, in most cases, if the speaker is over driven during normal operation. This is done so that the driver is not damaged. Replace a blown resistor as follows:

1. Determine which driver is not playing music.

2. Remove the appropriate resistor access cover from the enclosure by removing each of the 10-32 button head machine screws (see Figure 18 for resistor cover location).

3. Using the appropriate Allen head, unscrew the 4-40 Allen bolt that holds the resistor to its heatsink.

4. Insert the leads of the new resistor through the binding post hole. Retighten the binding post.

5. Attach the new resistor to its heatsink using the 4-40 Allen bolt.

6. Re-attach the resistor access cover to the enclosure, making sure not to over tighten the screws.

Replacing a Bad Driver

If you believe that a driver is blown, make sure that you have tried replacing the protective resistor before you replace the driver. No sound coming from a driver is often a blown resistor and not a bad driver. If you need to replace a driver, do so as follows:

1. Using the supplied Allen wrench, remove the machine screws holding the driver in place.

2. Insert the Allen wrench into one of the driver screw holes 1/8 inch. Gently lift out the driver, and place it onto the foam pad covering the front baffle.

Note: It is best to place an old towel under the driver so that you will not damage the enclosure when unsoldering the driver.

3. Using a 900 degree F soldering iron, heat up the solder joints and remove the driver.

4. Melt a small 1/8″ diameter bead of solder onto the tip of each wire. Heat the wire up until you see the solder wick into the copper.

5. Place the replacement driver onto the cloth and solder on the wires to the driver. The white wire connects to the positive side, and the black wire connects to the negative. The positive side is generally indicated by a red dot. Make sure to heat up the solder joint completely and hold firmly in place until the solder sets.

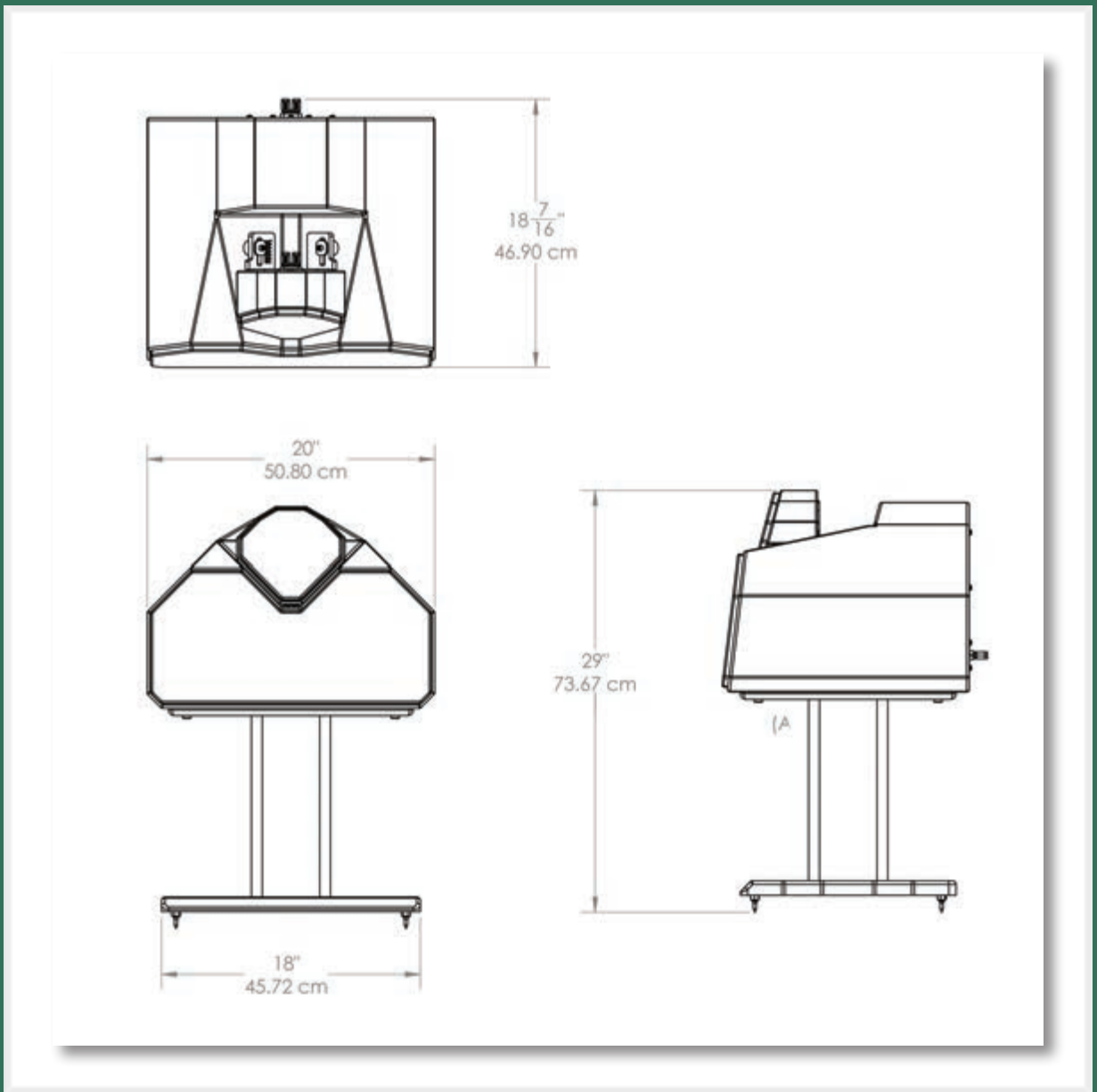
6. Replace the driver foam gasket.

7. Place the driver into the machined recess.

8. Replace the machine screws, tightening them to 30 inch/pounds of torque.

Note: Be careful not to over tighten the screws.

Section 9—Specifications



Section 9.1—WATCH Center Channel Specifications

Drivers:

Tweeter: One – 7″ (17.78 cm) Cellulose/Pulp Composite

Midrange/Woofer: Two – 1″ (2.54 cm), Inverted Titanium Dome

Measurements:

Impedance: 4 ohm

Sensitivity: 94 dB @ 1 watt @ 1 meter @ 1khz

Frequency Response: 45Hz–22.5kHz +/- 3 dB
room average response [RAR]

Dimensions:

Center Channel Height: 13 13/16″ (35.14 cm) w/o spikes

Center Channel Depth: 18 7/16 inches (46.90 cm)14″ (35.56 cm)

Center Channel Width: 20″ (50.80 cm)

Stand Height (without spikes): 14″ (35.56 cm) w/o spikes

Stand Depth: 18″ (45.72 cm)

Stand Width: 15″ (38.10 cm)

Weight Uncrated:

Speaker Weight: 77 lbs (34.93 kg)

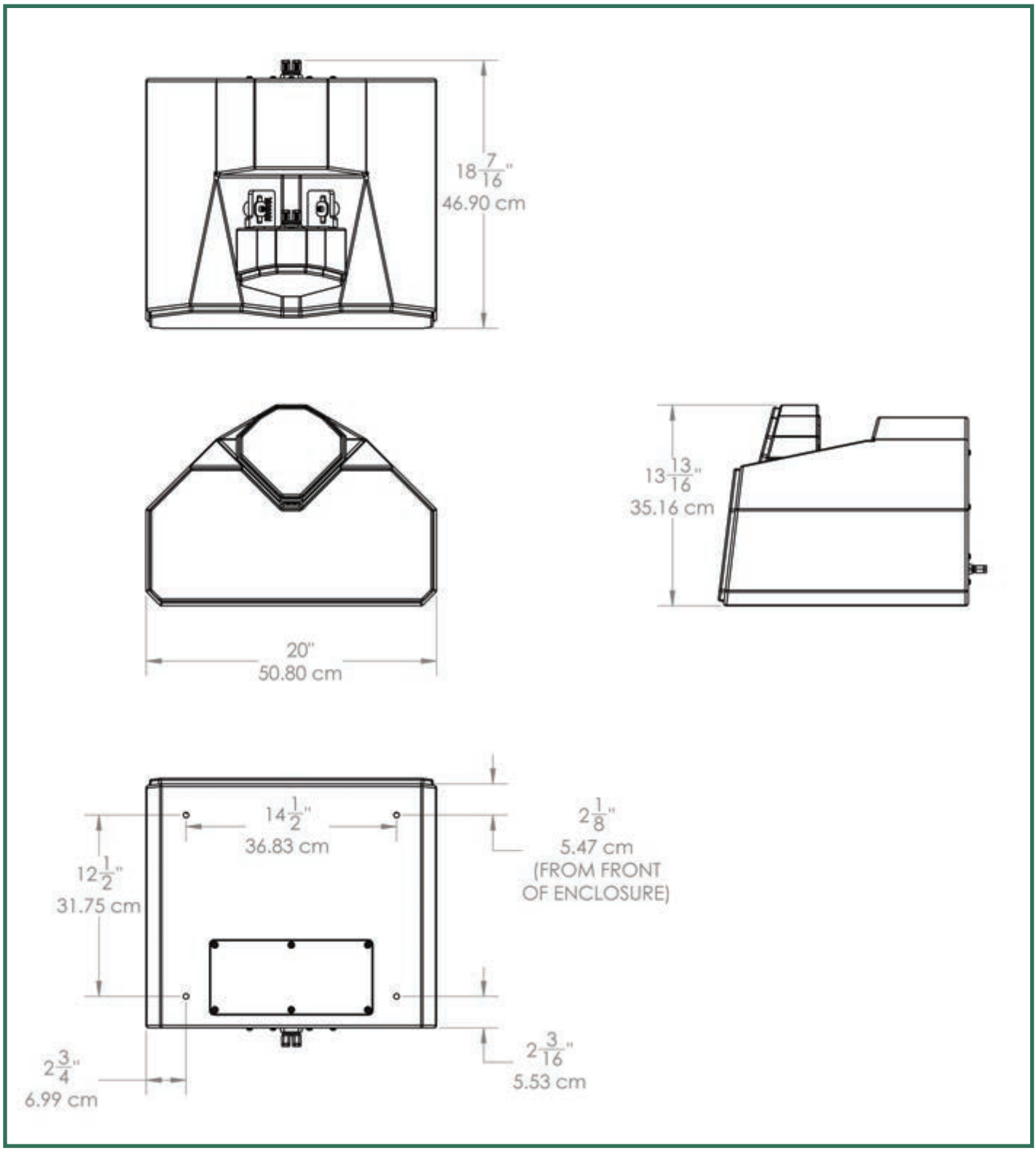
Stand Weight: 48 lbs (21.77 kg)

Shipping Weight (approximate):

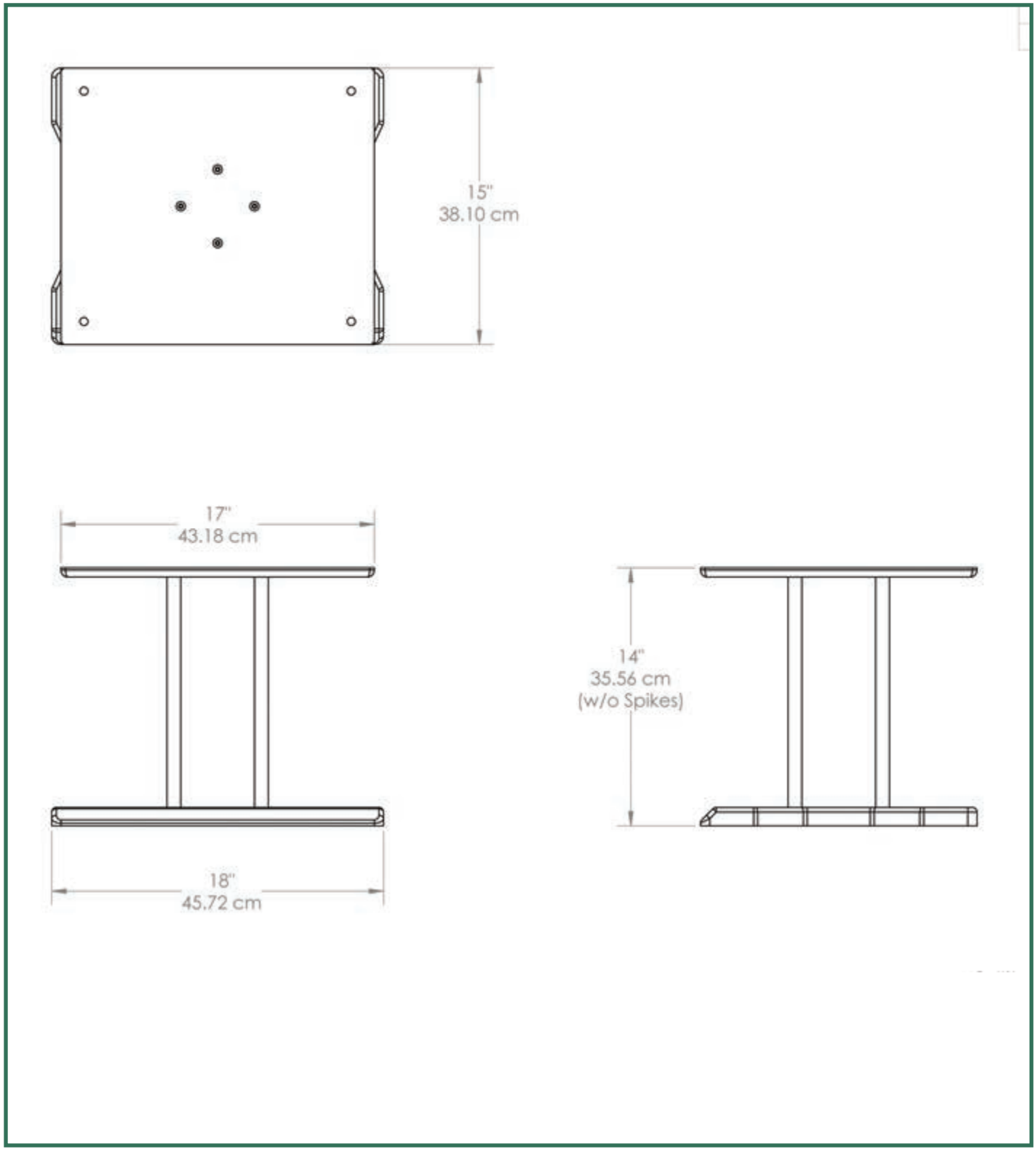
Center Channel: 48 lbs (21.77 kg)

Matching Stand: 55 lbs (24.95 kg)

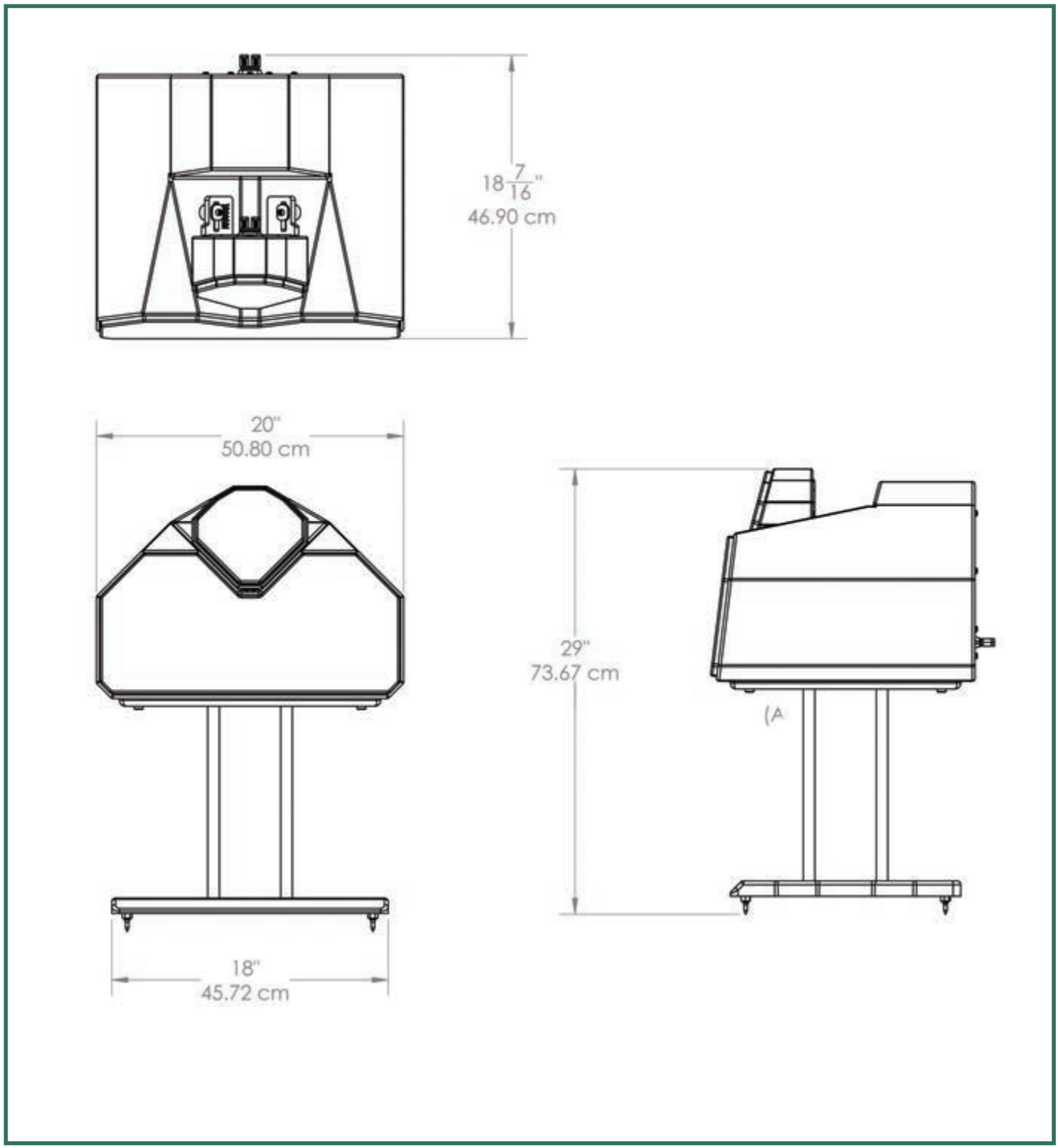
Section 9.2—Center Series 3 Dimensions



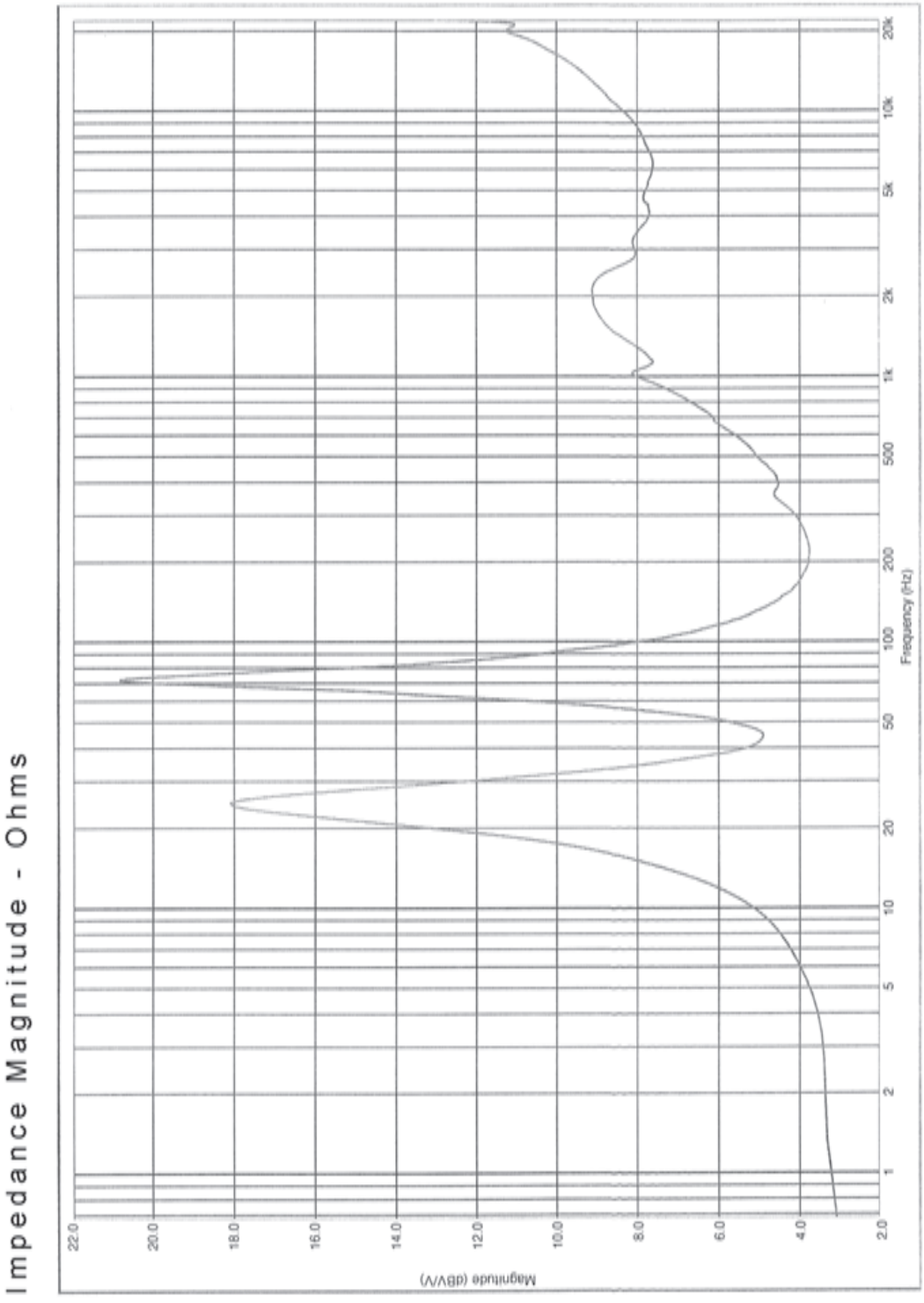
Section 9.3—Center Series 3 Matching Stand Dimensions



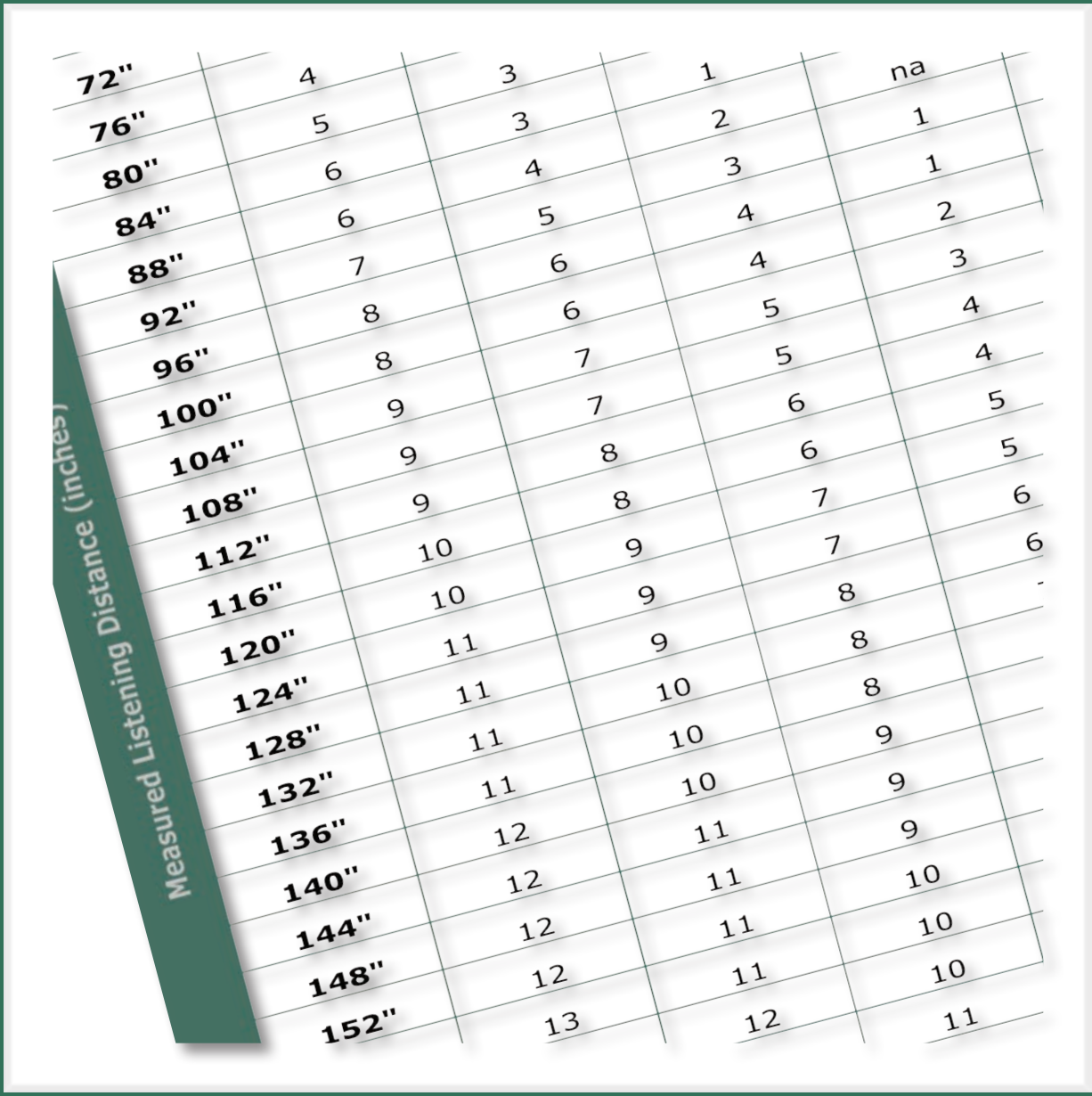
Section 9.4—Center Series 3 on Matching Stand Dimensions



Section 9.5—Center Series 3 Impedance Curve



Section 10—Tweeter Alignment Tables

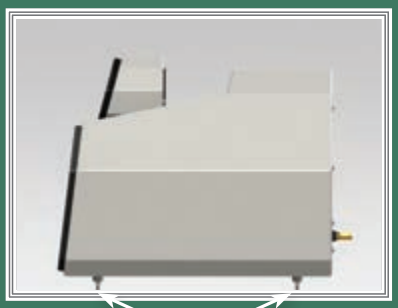


Measured Listening Distance (inches)				
72"	4	3	1	na
76"	5	3	2	1
80"	6	4	3	1
84"	6	5	4	2
88"	7	6	4	3
92"	8	6	5	4
96"	8	7	5	4
100"	9	7	6	5
104"	9	8	6	5
108"	9	8	7	6
112"	10	9	7	6
116"	10	9	8	-
120"	11	9	8	
124"	11	10	8	
128"	11	10	9	
132"	11	10	9	
136"	12	11	9	
140"	12	11	10	
144"	12	11	10	
148"	12	11	10	
152"	13	12	11	

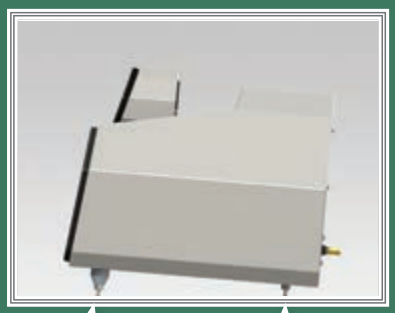
Table 1—For Placement on Floor

Measured Listening Distance (inches)	Measured Ear Height (inches) 36	40	44	48	52
60	3 ‡	2.5 *	na	na	na
64	4 ‡	4 *	1 *	na	na
68	5 ‡	5 *	2.5 *	na	na
72	3.5 †	3.5 ‡	3.5 *	1 *	na
76	4.5 †	4.5 ‡	4.5 *	2.5 *	na
80	5 †	3 †	3 ‡	3.5 *	1 *
84	6 †	4 †	4 ‡	4 *	2 *
88	6.5 †	4.5 †	4.5 ‡	3 ‡	3 *
92	7 †	5 †	3 †	3.5 ‡	4 *
96	7.5 †	5.5 †	4 †	4 ‡	5 *
100	3	6 †	4.5 †	5 ‡	3 ‡
104	3.5	7 †	5 †	3 †	4 ‡
108	4	7 †	5.5 †	4 †	4.5 ‡
112	4.5	3	6 †	4.5 †	3 †
116	5	3	6.5 †	5 †	3.5 †
120	5	3.5	7 †	5.5 †	4 †
124	5.5	4	7.5 †	6 †	4.5 †
128	6	4.5	3	6.5 †	5 †
132	6	5	3	7 †	5.5 †
136	6.5	5	3.5	7 †	6 †
140	7	5.5	4	7.5 †	6 †
144	7	6	4.5	3	6.5 †
148	7.5	6	5	3.5	7 †
152	7.5	6.5	5	4	7 †
156	8	6.5	5.5	4	3
160	8	7	5.5	4.5	3
164	8.5	7	6	4.5	3.5
168	8.5	7.5	6	5	3.5
172	8.5	7.5	6.5	5	4
176	9	8	6.5	5.5	4
180	9	8	7	5.5	4.5

† = Spike, Nut, and Diode
‡ = Spike, Nut, Diode, and One Spacer
* = Spike Nut Diode and Two Spacers

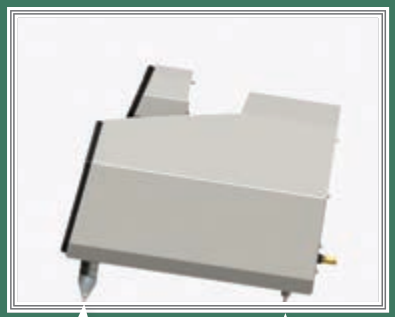


Spike and Nut Only



Spike, Nut and Diode

Spike and Nut Only



Spike, Nut and Diode with Spacers

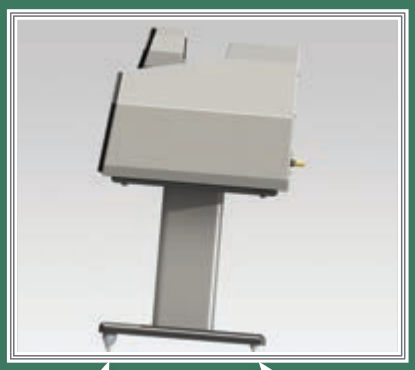
Spike and Nut Only

Table 2—For Placement on Stand

Measured Listening Distance (inches)	Measured Ear Height (inches)				
	36	40	44	48	52
60	6	7.5 †	4.5 †	2 †	na
64	6	3	5.5 †	3 †	na
68	7	4	6 †	4 †	1 †
72	7.5	5	7 †	4.5 †	2 †
76	8	5	3	5 †	3 †
80	8	6	3.5	6 †	4 †
84	9	6	4	7 †	4.5 †
88	9	7	4.5	7 †	5 †
92	9	7	5	3	6 †
96	9.5	7.5	5.5	3.5	6.5 †
100	10	8	6	4	7 †
104	10	8	6.5	4.5	7.5 †
108	10.5	8.5	7	5	3
112	10.5	9	7	5	3.5
116	11	9	7.5	6	4
120	11	9	7.5	6	4.5
124	11	9.5	8	6.5	5
128	11	10	8	6.5	5
132	11.5	10	8.5	7	5.5
136	11.5	10	8.5	7	6
140	11.5	10	9	7.5	6
144	12	10.5	9	8	6.5
148	12	10.5	9	8	6.5
152	12	11	9.5	8	7
156	12	11	9.5	8.5	7
160	12	11	10	8.5	7.5
164	12.5	11	10	9	7.5
168	12.5	11	10	9	8
172	12.5	11.5	10	9	8
176	12.5	11.5	10.5	9	8
180	13	11.5	10.5	9.5	8.5

† = Spike, Nut, and Diode

Spike and Nut Only



Spike, Nut and Diode

Spike and Nut Only

Section 11—Ceiling Mount

This section is intended to provide you with the required information for the construction of a custom mounting bracket for your Center channel. It is important that this bracket be made as instructed so as to be strong enough to securely fasten the Center channel to the ceiling or wall. The requirements for the bracket are as follows:

Section 11.1—Ceiling Mounted Center Channel

A ceiling mounted Center channel will be mounted upside down (tweeter beneath the midrange drivers). It will also need to be rotated down towards the listening position. Due to the variation in mounting locations and ceiling heights we are unable to determine for you, based solely on listening distance and measured ear height, the amount of required rotation for your particular setup. However, we will offer some suggestions that will allow you to achieve the best performance possible for your particular speaker location. The guidelines are as follows:

- The bracket must be able support 250 pounds. This is more than the weight of the Center channel, but it is necessary to maintain correct safety standards.

- The bracket should angle the speaker down towards the listening position. Ideally, the midrange drivers should be firing 15″ below the listening ear height (see Figure 20).

- A good material for the bracket is 1″ square tubing. This can be easily welded together and will provide a rigid, strong support for your Center channel.

- The slanted portion of the bracket will require mounting holes whose location match those on the bottom of the Center channel. The hole pattern is shown in Figure 21.

Once you have made the custom bracket, please refer to Section 4.7 for complete setup information.

Section 11.2—Mounting Center Channel above Screen

Mounting the Center channel above a TV requires a custom made bracket. This bracket will support the weight of the Center channel and allow it to be rotated toward the listening position (see Figure 20 below). This rotation will significantly improve the performance of your Center channel, improving system integration, phase delay correction, and providing a correct image height.

The custom made bracket must have 4 mounting holes as shown in Figure 21 (opposing page). These holes will allow the Center channel to be bolted to the mount. Make sure that the holes go all the way through the bracket and that the locations are such that they will allow a nut to be tightened to the bolt that is inserted through these holes.

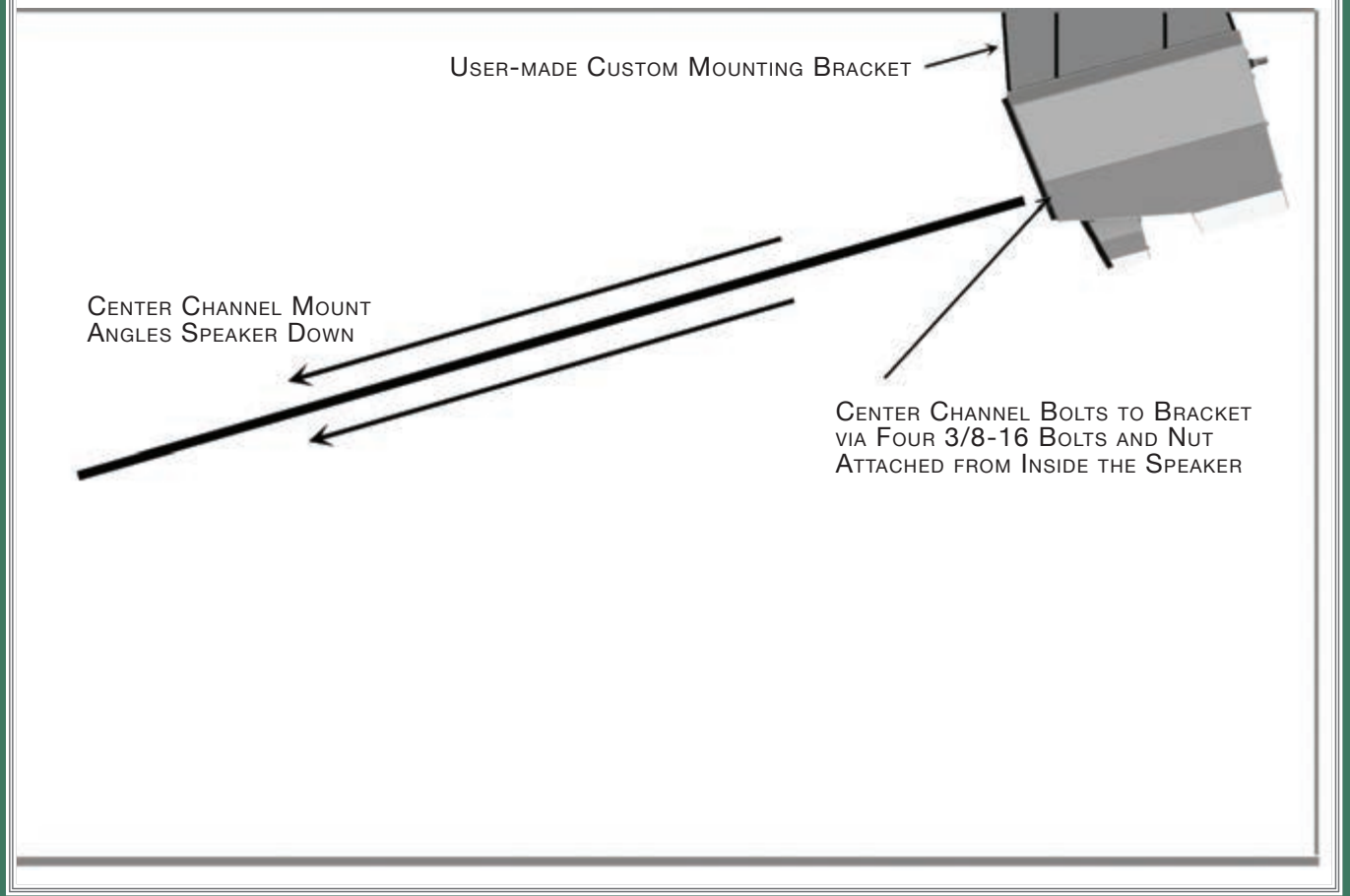

User-made Custom Mounting Bracket
Center Channel Mount
Angles Speaker Down
Center Channel Bolts to Bracket
via Four 3/8-16 Bolts and Nut
Attached from Inside the Speaker

Figure 20 – Mounting Center Channel to Ceiling

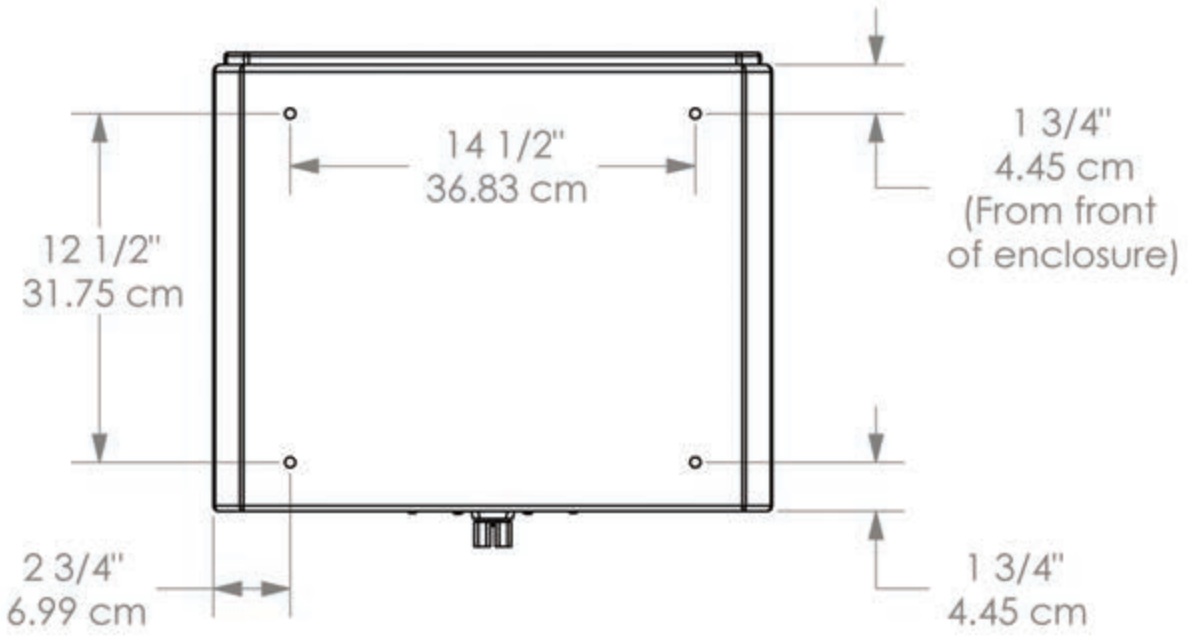


FIGURE 21 – CENTER MOUNTING HOLE LOCATIONS

The bracket must also rotate the Center channel towards the listening position. This can be achieved by making a bracket that is higher in the back than in the front. Because the rotation required for the Center channel depends on your listening position, speaker mount height, and listening ear height, we are unable to provide a table with all of the possible combinations. However, we offer the following rotational suggestions that will bring you very close to the ideal rotation (assuming a 5 foot mounting height).

Listening Distance	Required Rotation
5-10 feet	25 degrees
10-15 feet	15 degrees
15-20 feet	10 degrees

Once you have made the custom bracket, please refer to Section 4.6 for complete setup information.

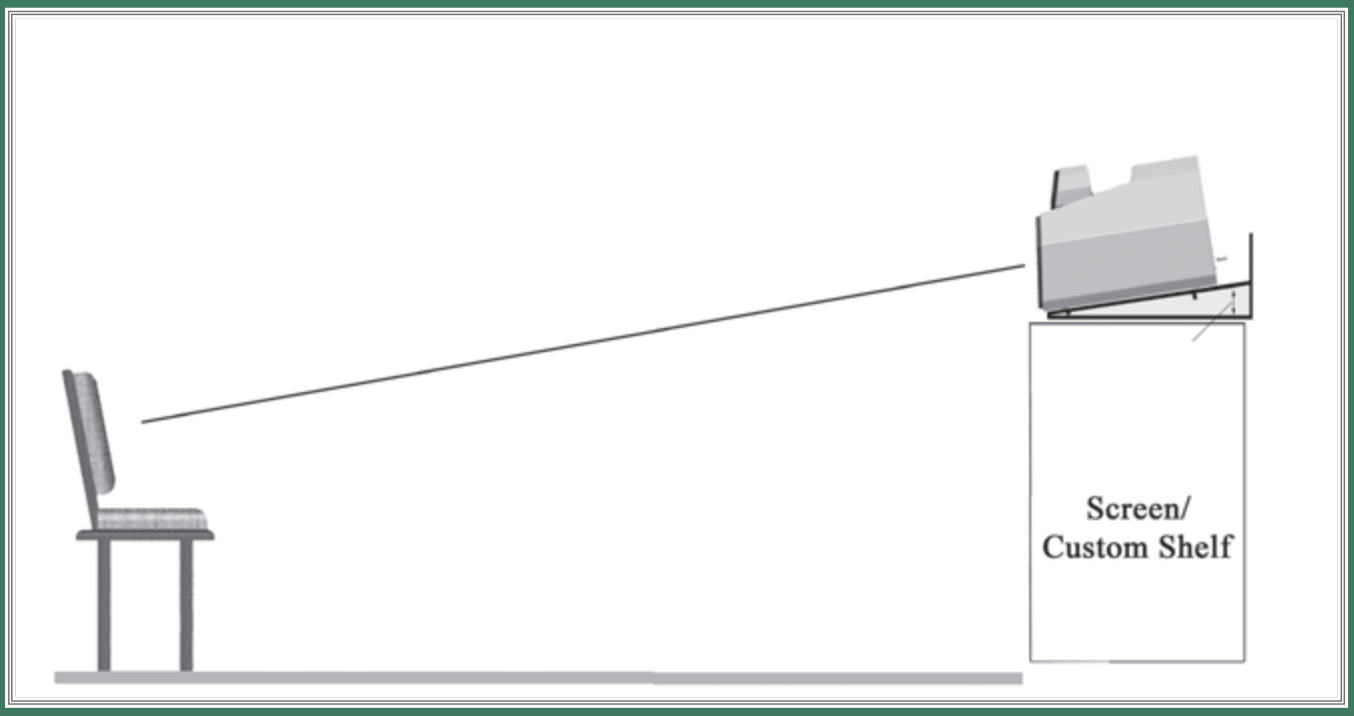


Figure 22 – Center Channel Mounted above a TV

WATCH Center

Section 12—Warranty Information

WILSON AUDIO

Section 12.1—Warranty Information

Limited Warranty

Subject to the conditions set forth herein, Wilson Audio warrants its electronics to be free of manufacturing defects in material and workmanship for the Warranty Period. The Warranty Period is a period of 90 days from the date of purchase by the original purchaser, or if both of the following two requirements are met, the Warranty Period is a period of five (5) years from the date of purchase by the original purchaser:

> **Requirement No. 1:** No later than 30 days after product delivery to the customer, the customer must have returned the Warranty Registration Form to Wilson Audio;
>
> **Requirement No. 2:** The product must have been professionally installed by the Wilson Audio dealer that sold the product to the customer.

Failure to comply with either requirement no. 1 or requirement no. 2 will result in the warranty period being limited to a period of 90 days only.

Conditions

This Limited Warranty is also subject to the following conditions and limitations. The Limited Warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, or has been abused or misused, damaged by accident or neglect or in being transported, or if the product has been tampered with or service or repair of the product has been attempted or performed by anyone other than Wilson Audio, an authorized Wilson Audio Dealer Technician or a service or repair center authorized by Wilson Audio to service or repair the product. Contact Wilson Audio at (801) 377-2233 for information on location of Wilson Audio Dealers and authorized service and repair centers. Most repairs can be made in the field. In instances where return to Wilson Audio's factory is required, the dealer or customer must first obtain

a return authorization. Purchaser must pay for shipping to Wilson Audio, and Wilson Audio will pay for shipping of its choice to return the product to purchaser. **A returned product must be accompanied by a written description of the defect.** Wilson Audio reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

Remedy

In the event that the product fails to meet the above Limited Warranty and the conditions set forth herein have been met, the purchaser's sole remedy under this Limited Warranty shall be to: (1) contact an authorized Wilson Audio Dealer within the Warranty Period for service or repair of the product without charge for parts or labor, which service or repair, at the Dealer's option, shall take place either at the location where the product is installed or at the Dealer's place of business; or (2) if purchaser has timely sought service or repair and the product cannot be serviced or repaired by the Dealer, then purchaser may obtain a return authorization from Wilson Audio and at purchaser's expense return the product to Wilson Audio where the defect will be rectified without charge for parts or labor.

Warranty Limited to Original Purchaser

This Limited Warranty is for the sole benefit of the original purchaser of the covered product and shall not be transferred to a subsequent purchaser of the product, unless the product is purchased by the subsequent purchaser from an authorized Wilson Audio Dealer who has certified the product in accordance with Wilson Audio standards and requirements and the certification has been accepted by Wilson Audio, in which event the Limited Warranty for the product so purchased and certified shall expire at the end of the original Warranty Period applicable to the product.

Demonstration Equipment

Equipment, while used by an authorized dealer for demonstration purposes, is warranted to be free of manufacturing defects in materials and workmanship for a period of five (5) years from the date of shipment to the dealer. Demo equipment needing warranty service may be repaired on-site or, if necessary, correctly packed and returned to Wilson Audio by the dealer at dealer's sole expense. Wilson Audio will pay return freight of its choice. A returned product must be accompanied by a written description of the defect. Dealer owned demonstration equipment sold at retail within two (2) years of date of shipment to the dealer is warranted to the first retail customer to be free of manufacturing defects in materials and workmanship for the same time periods as if the product had originally been bought for immediate resale to the retail customer. Wilson Audio products are warranted for a period of 90 days, unless extended to 5 years, as provided above, by return and filing of completed Warranty Registration at Wilson Audio within 30 days after product delivery to customer and the product was professionally installed by the Wilson Audio Dealer that sold the product to the customer.

Miscellaneous

All express and implied warranties not provided for herein are hereby expressly disclaimed. Any legally imposed implied warranties relating to the product shall be limited to the duration of this limited warranty. This limited warranty does not extend to any incidental or consequential costs or damages to the purchaser.

Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.